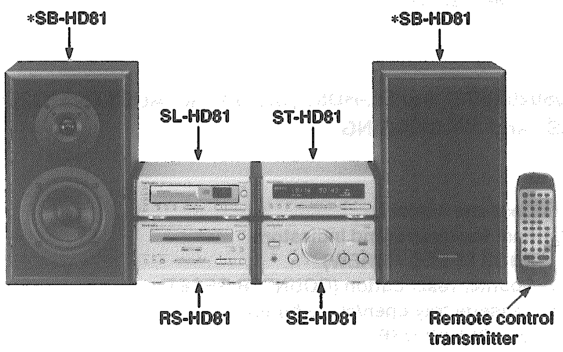
ORDER NO. AD9802029C2

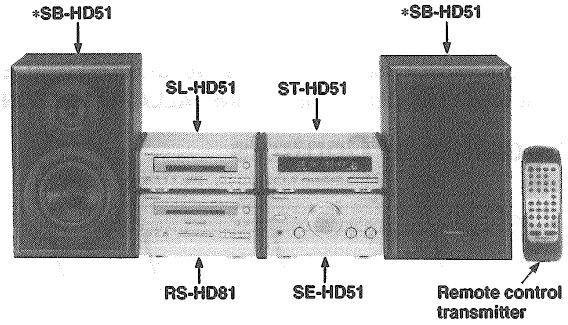
Service Manual

Cassette Deck

RS-HD81

Cassette deck *DOLBY SYSTEM





Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

Colour

(N) .... Gold Type

Area

E .... Europe.

System : SC-HD51
SC-HD81

AR-1 MECHANISM SERIES

Specifications

Deck system	Stereo cassette deck
Track system	4 track, 2 channel
Recording system	AC bias
Bias frequency	100kHz
Erasing system	AC erase
Heads	
(Recording/Playback head)	Permalloy head
(Erasing head)	Double gap ferrite head
Motors	
Capstan drive	DC servo motor
Reel table drive	DC motor
Tape speed	4.8 cm/s
Wow and flutter	0.1% (WRMS)
Fast forward and rewind times	Approx. 52 seconds with C-60 cassette tape
Frequency response	
(Dolby NR off)	
TYPE Ⅰ (Normal)	20Hz–17kHz (DIN)
TYPE Ⅱ (High)	20Hz–17kHz (DIN)
TYPE Ⅳ (Metal)	20Hz–17kHz (DIN)

S/N (Signal level=max recording level, TYPE Ⅱ type tape)	
NR off	56dB (A weighted)
Dolby B NR on	66dB (A weighted)
Input sensitivity and impedance	
REC (IN)	280mV/23kΩ
Output voltage and impedance	
PLAY (OUT)	280mV/220Ω
■ General	
Dimensions (W × H × D)	196 × 103 × 221mm
Weight	1.8kg

Notes:
1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY", and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

System/SC-HD51:

Tuner: ST-HD51, Compact Disc Player: SL-HD51, Amplifier: SE-HD51, **Cassette Deck: RS-HD81**, Speaker: *SB-HD51

System/SC-HD81:

Tuner: ST-HD81, Compact Disc Changer: SL-HD81, Amplifier: SE-HD81, **Cassette Deck: RS-HD81**, Speakers: *SB-HD81

Notes:*...... Made in PAES

⚠WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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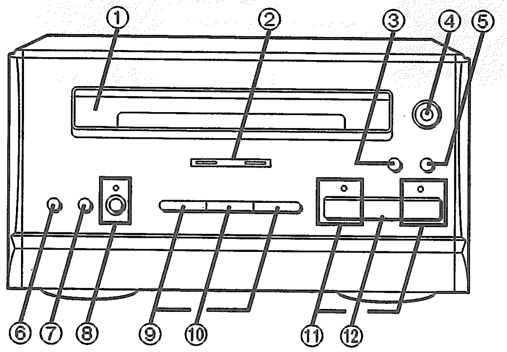
NOTE:

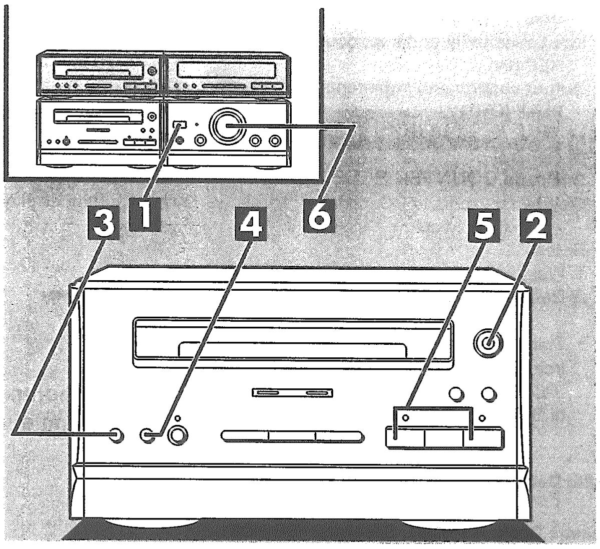
Refer to the service manual for Model No. SE-HD81 (ORDER No. AD9802028C2) and SE-HD51 (ORDER No. AD9802031C2) for information on "ACCESSORIES", "INSTALLATION", "CONNECTIONS" and "PACKAGING".

Location of Controls



① Cassette holder
② Fast forward/rewind indicators (HIGH SPEED FF/REW)
③ Counter reset button (COUNTER RESET)
④ Cassette tray open/close button (⏏ OPEN/CLOSE)
⑤ Display button (DISPLAY)
⑥ Dolby noise reduction button (DOLBY NR)
⑦ Reverse mode select button (REV MODE)
⑧ Record pause button and indicator (● REC PAUSE)
⑨ Fast forward/rewind/tape program sensor buttons ([TPS] ◀◀, ▶▶ [TPS])
⑩ TPS skip button (TPS SKIP)
⑪ Playback buttons and indicators (◀, ▶)
⑫ Stop button (■)

Listening to Tapes



Playback

Type of tape which can be played correctly:
The unit automatically identifies the type of tape.

Normal position/TYPE I	○
High position/TYPE II	○
Metal position/TYPE IV	○

1 **Switch on the power.**

2 **Press ⏏ OPEN/CLOSE on deck, and then insert the tape.**
Load a tape with the exposed side facing the cassette holder's insertion part.
Insert the cassette tape until it touches the back of the compartment.
Press ⏏ OPEN/CLOSE once again to close the cassette holder.

Note
Keep your fingers out of the cassette tray so that you do not get pinched when it closes.

3 To listen to a tape recorded in Dolby B NR
Press DOLBY NR and check "DD" is displayed.
When playing back a tape which was not recorded on Dolby NR system, press DOLBY NR so that indications go off.

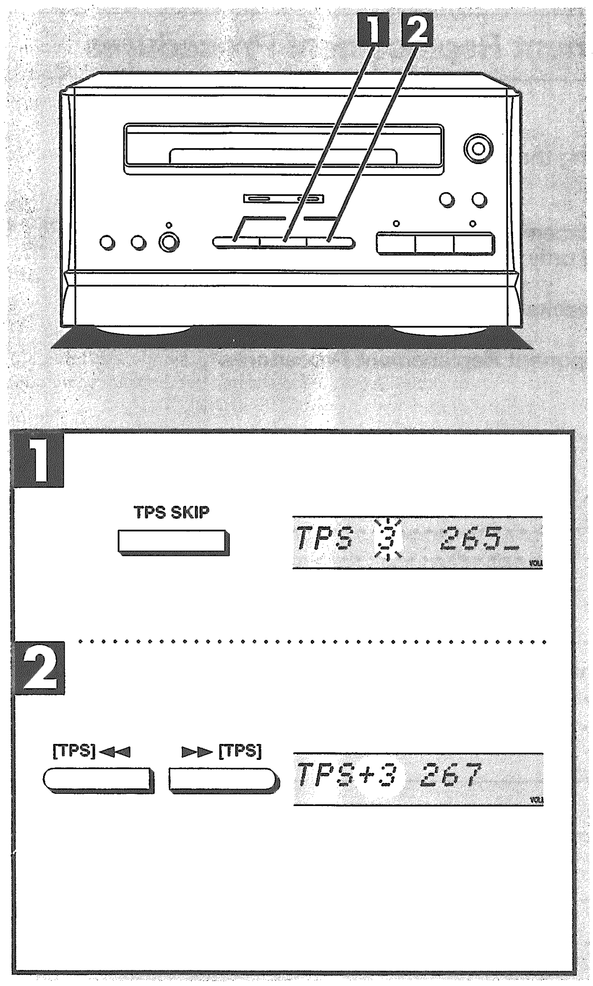
4 **Press REV MODE to select the reverse mode.**
Each time you press REV MODE, one of the indicators will appear.

⇄: The deck plays one side only, and then stops automatically.
⇄⊃: The deck plays both sides, and then stops automatically.
⊂⇄⊃: The deck plays both sides 8 times, and then stops automatically.

5 **Press ◀ or ▶.**
▶: The forward side will play.
◀: The reverse side will play.

6 **Adjust the volume level as you like.**

To stop tape playback:
Press ■.



To find the beginning of a program (TPS: tape program sensor)

The number of programs corresponding to the number of times TPS SKIP was pressed will be skipped, and the desired program is located (up to 9 programs before or after the program now heard).

1 Press TPS SKIP until selecting the numbers of tracks you want to skip.

Each time you press this button, the display will change as follows:

TPS 1→2→3...8→9→TAPE

2 Press [TPS] ◀◀ or ▶▶ [TPS].

If the forward side (▶) is playing:

▶▶ [TPS]: Skips forward by the number of tracks corresponding to the number you select in step 1. ("+" lights.)

[TPS] ◀◀: Skip backward by the number of tracks corresponding to the number you select in step 1. ("−" lights.)

When you select "TPS 1", the deck will skip back to the beginning of the track you are currently listening to and will start playing it again.

The illustration shows an example when you select "TPS 3" while the forward side (▶) is playing.

If the reverse side (◀) of the tape is playing:

The reverse operation will take place.

Notes

- To change the setting (the number of the programs to be skipped, the tape travel direction, etc.) while TPS skip is activated, press ■ to stop the deck first.
- If the number of TPS skips specified is larger than the number of songs recorded on the tape, the unit may stop at the end of the tape or otherwise fail to operate correctly.

For your reference:

To skip to the next track or back to the beginning of the track you are currently listening to, perform only above step 2.

Notes

TPS is the function that searches for the silent passage in a tape program. So, it may sometimes fail to operate correctly in the following situations:

- When the interval between programs is less than 4 seconds
- When there is a particular low-level passage in a program (for example, classical music)
- When the program is less than 10 seconds, or when it is less than 10 seconds from the listening point to the beginning of the next tune
- When a tape recorded with fade-ins or fade-outs

Operation Checks and Main Component Replacement Procedures

NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.

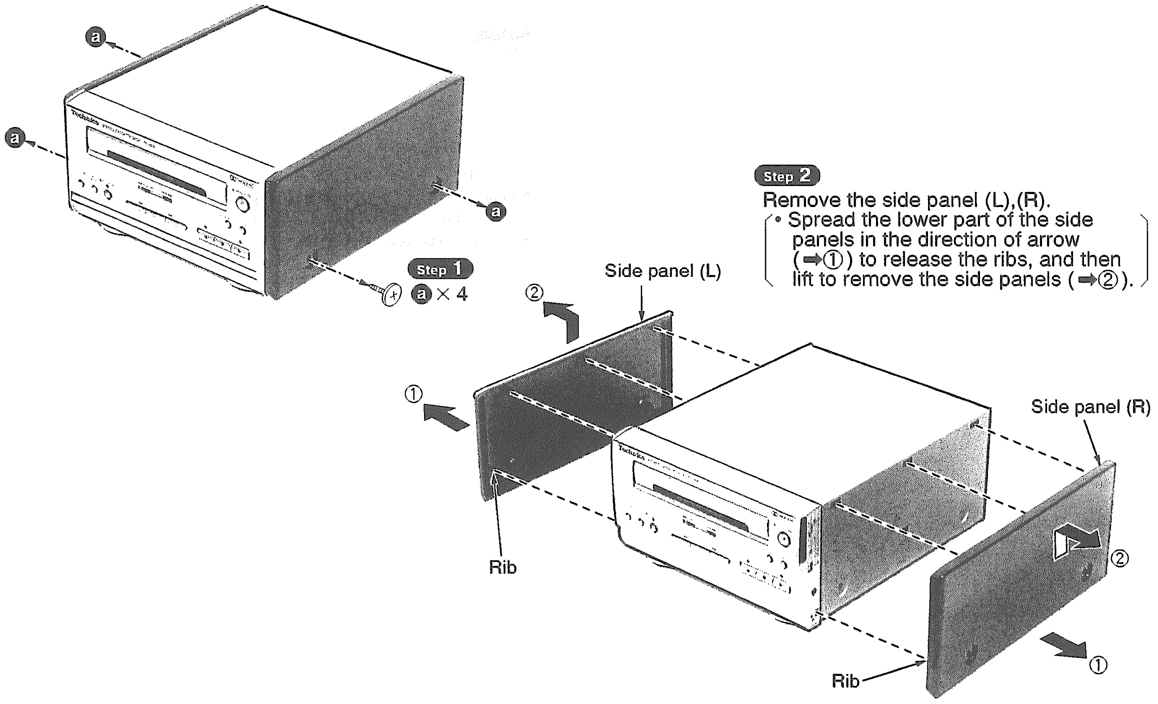
• Contents

• Checking Procedure for each P.C.B. Page.
1. Checking for the operation P.C.B.. ………… 4,5.
2. Checking for the main P.C.B.. ………… 5.

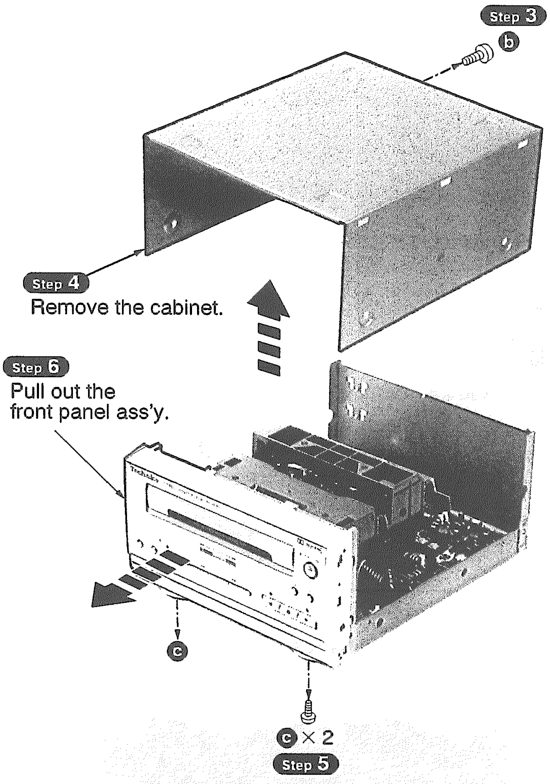
• Main Component Replacement Procedures
1. Replacement for the cassette holder ass'y. ………… 6~8.
2. Replacement for the belt, reel motor ass'y and capstan motor ass'y. ………… 8~10.
3. Replacement for the parts mounted on mechanism P.C.B.. ………… 10.
4. Replacement for the head block and pinch roller ass'y. ………… 10.

Checking Procedure for each P.C.B.

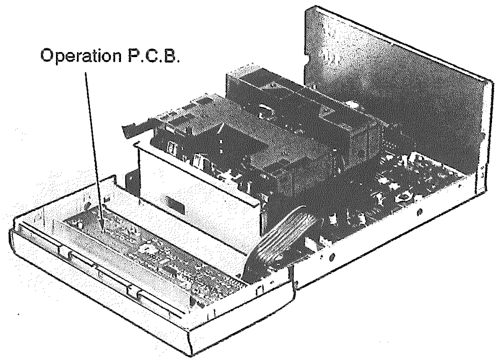
1. Checking for the operation P.C.B.



Step 2
Remove the side panel (L),(R).
• Spread the lower part of the side panels in the direction of arrow (➡①) to release the ribs, and then lift to remove the side panels (➡②).

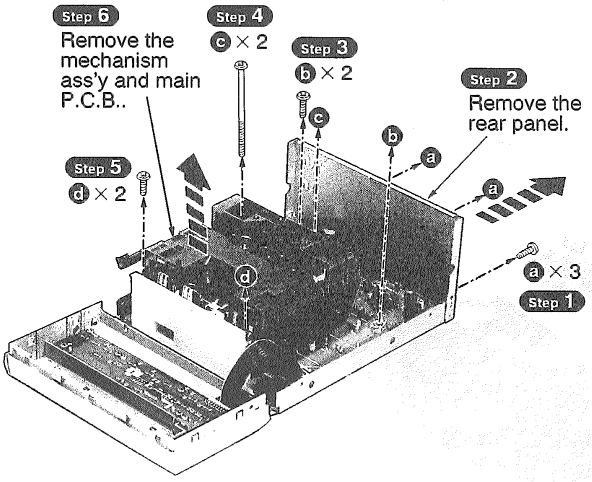

Step 3
ⓑ
Step 4
Remove the cabinet.
Step 6
Pull out the
front panel ass'y.
ⓒ
ⓒ × 2
Step 5

- Check the operation P.C.B. as shown below.

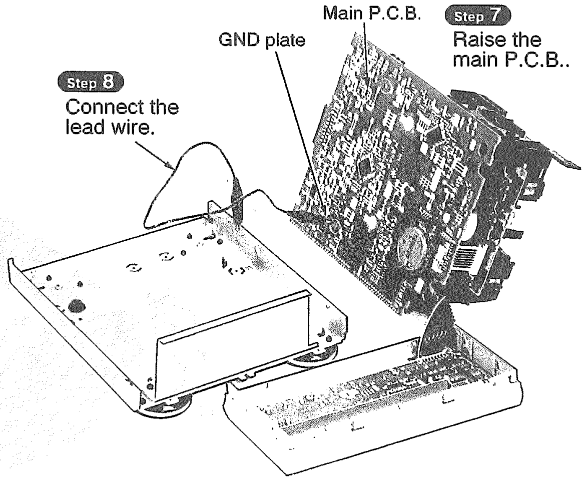

Operation P.C.B.

2. Checking for the main P.C.B.

- Follow the item 1 (Step 1 ~ Step 6) in checking procedures for each P.C.B. on pages 4 and 5.


Step 6
Remove the mechanism ass'y and main P.C.B..
Step 4
ⓒ × 2
Step 3
ⓑ × 2
Step 2
Remove the rear panel.
Step 5
ⓓ × 2
ⓒ
ⓑ
ⓐ
ⓐ
ⓓ
ⓐ × 3
Step 1

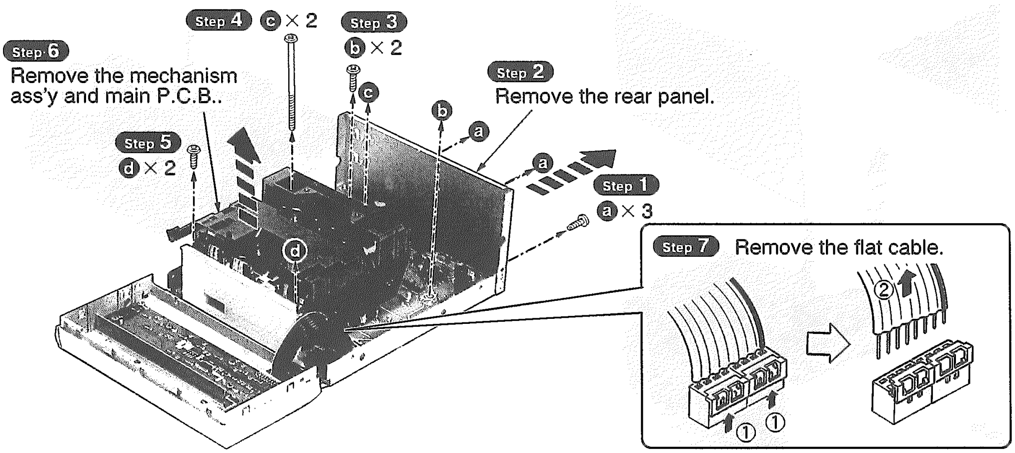
- Check the main P.C.B. as shown below.


Main P.C.B.
Step 7
Raise the main P.C.B..
GND plate
Step 8
Connect the lead wire.

Main Component Replacement Procedures

1. Replacement for the cassette holder ass'y

- Follow the item 1 (Step 1 ~ Step 6) in checking procedures for each P.C.B. on pages 4 and 5.



Step 1 ⓐ × 3

Step 2 Remove the rear panel.

Step 3 ⓑ × 2

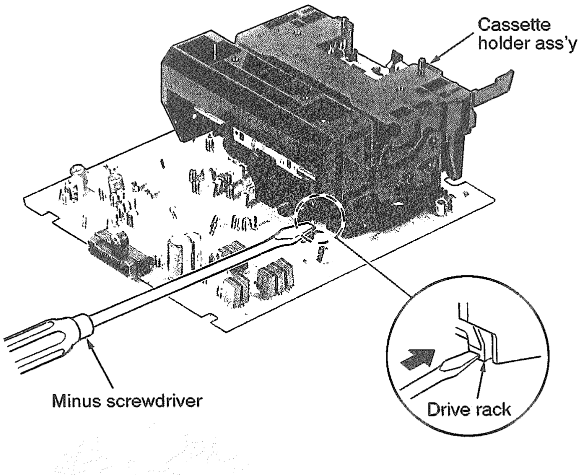
Step 4 ⓒ × 2

Step 5 ⓓ × 2

Step 6 Remove the mechanism ass'y and main P.C.B..

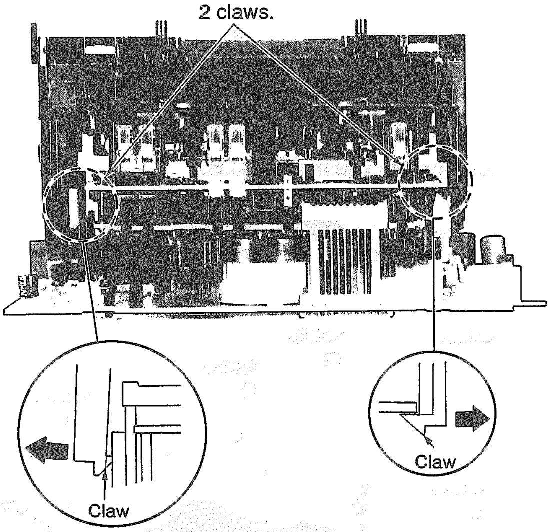
Step 7 Remove the flat cable.

Step 8 Press the drive rack with minus screwdriver, and then open the cassette holder ass'y

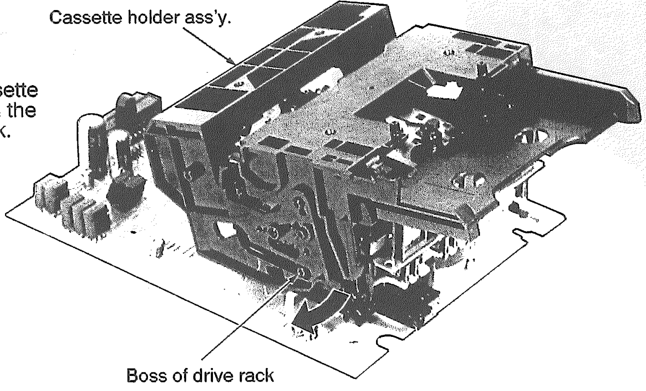


Cassette holder ass'y
Minus screwdriver
Drive rack

Step 9 Release the 2 claws.



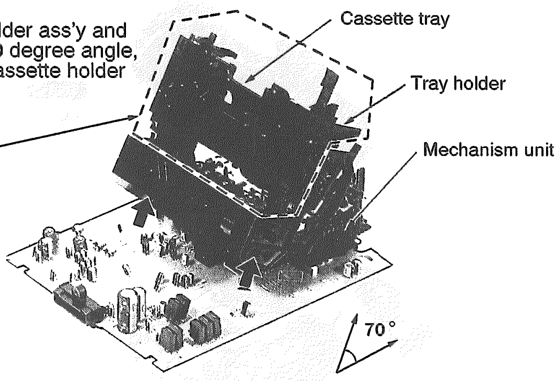
Step 10 Remove the cassette holder ass'y from the boss of drive rack.

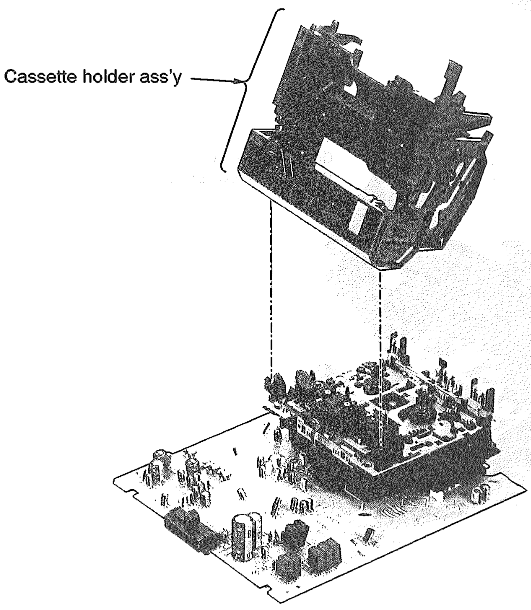


Cassette holder ass'y.
Boss of drive rack

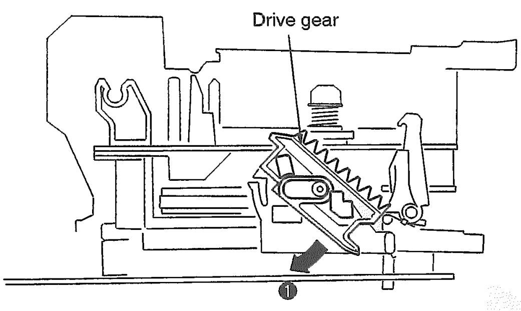
Step 11
Locate the cassette holder ass'y and mechanism unit at a 70 degree angle, and then pull out the cassette holder ass'y.

NOTE
When removing the cassette holder ass'y, avoid to pull it with holding cassette tray or tray holder.

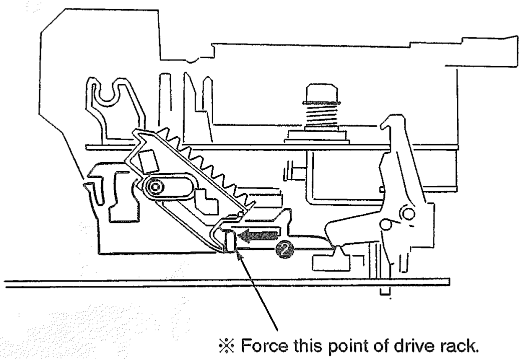

Cassette tray
Tray holder
Mechanism unit
70°


Cassette holder ass'y

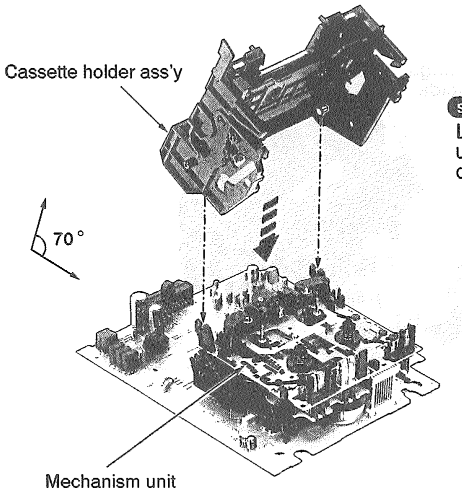
Installation of the cassette holder ass'y after replacement


Drive gear
❶

Step 1
Tilt the drive gear in the direction of arrow ❶.

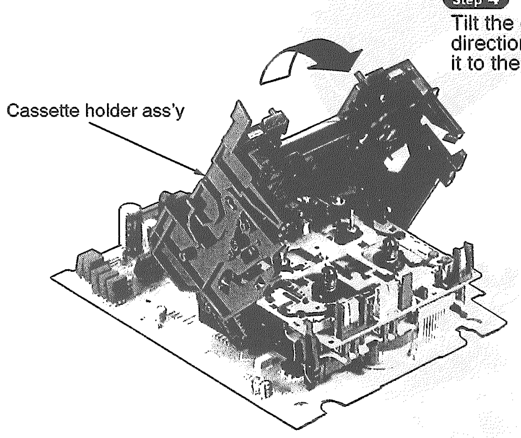

❷
※ Force this point of drive rack.

Step 2
Force the drive rack fully in the direction of arrow ❷.



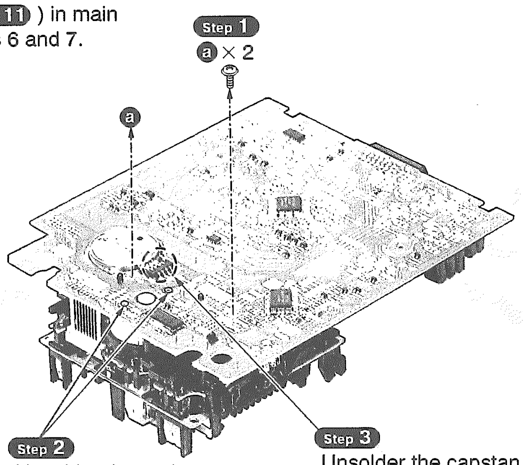
Step 3
Locate the cassette holder ass'y and mechanism unit at a 70 degree angle, and then install the cassette holder ass'y.

Step 4
Tilt the cassette holder ass'y in the direction of arrow, and then secure it to the mechanism ass'y.



2. Replacement for the belt, reel motor ass'y and capstan motor ass'y

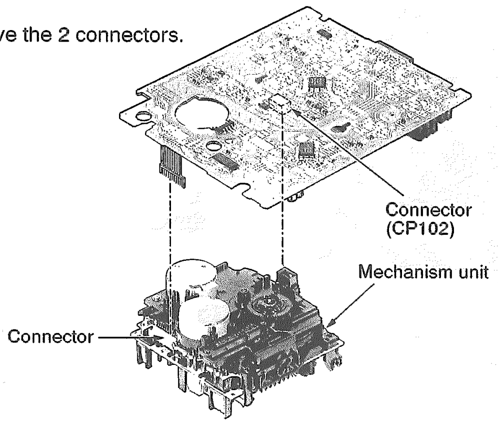
- Follow the item 1 (Step 1 ~ Step 6) in checking procedures for each P.C.B. on pages 4 and 5.
- Follow the item 1 (Step 1 ~ Step 11) in main component procedures on pages 6 and 7.



Step 1
ⓐ × 2

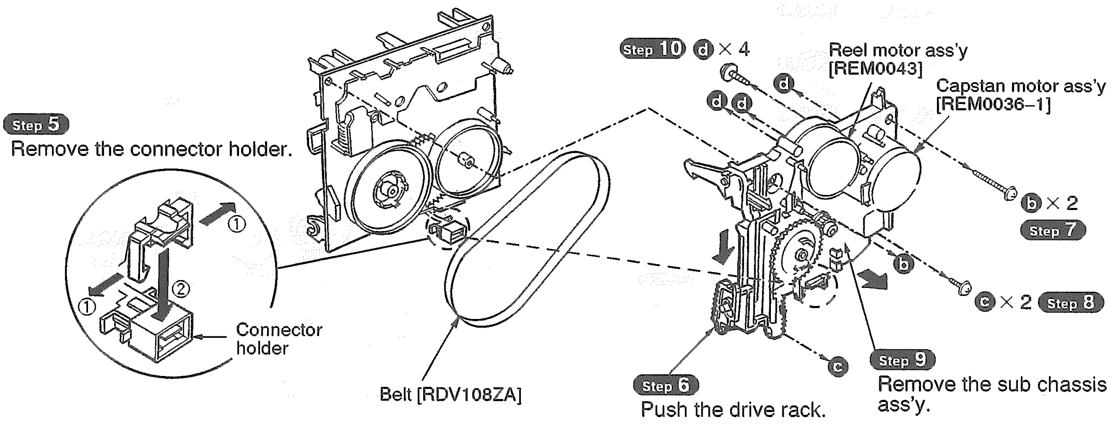
Step 2
Unsolder the reel motor terminals (2 points)

Step 3
Unsolder the capstan motor terminals (4 points)



Step 4
Remove the 2 connectors.

Connector (CP102)
Mechanism unit
Connector



Step 5
Remove the connector holder.

Step 6
Push the drive rack.

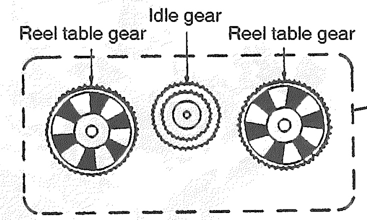
Step 7
Step 8

Step 9
Remove the sub chassis ass'y.

Step 10

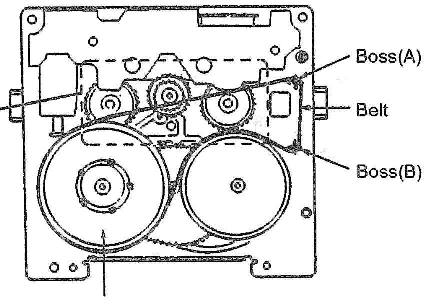
ⓓ × 4
Reel motor ass'y [REM0043]
Capstan motor ass'y [REM0036–1]
ⓓ
ⓓ ⓓ
ⓑ × 2
ⓑ
ⓒ × 2
ⓒ
①
②
①
Connector holder
Belt [RDV108ZA]

Installation of the sub chassis ass'y after replacement



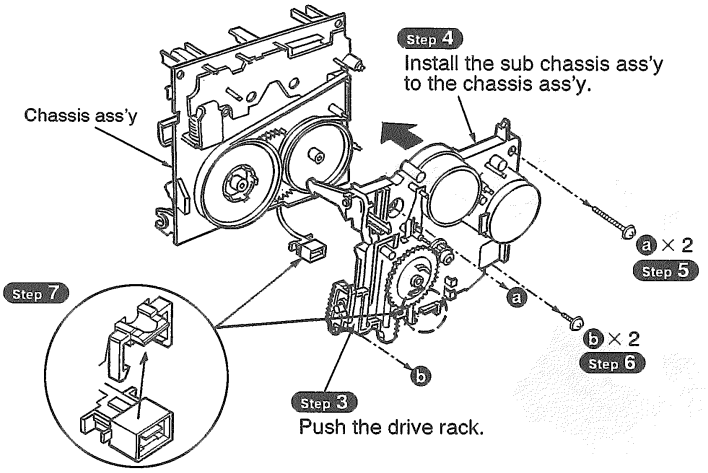
Step 1
Place the idle gear in the center.

Idle gear
Reel table gear
Reel table gear



Step 2
Temporarily secure the belt.

Boss(A)
Belt
Boss(B)
FWD side flywheel ass'y


Chassis ass'y
a × 2
b × 2
a
b

Step 4
Install the sub chassis ass'y to the chassis ass'y.

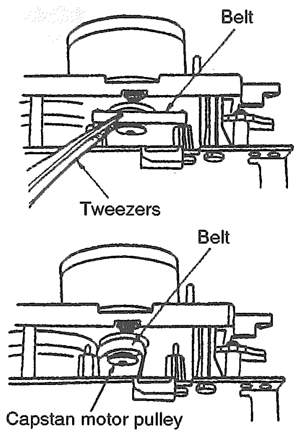
Step 5

Step 6

Step 7

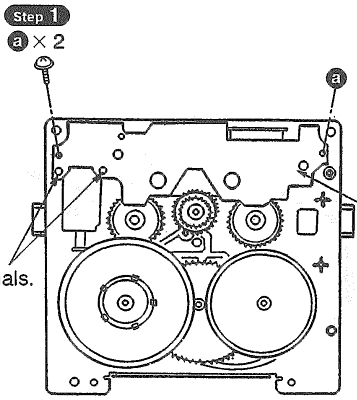
Step 3
Push the drive rack.

Step 8
Secure the belt with the capstan motor pulley.


Belt
Tweezers
Belt
Capstan motor pulley

3. Replacement for the parts mounted on mechanism P.C.B.

- Follow the item 1 (Step 1 ~ Step 6) in checking procedures for each P.C.B. on pages 4 and 5.
- Follow the item 1 (Step 1 ~ Step 11) in main component procedures on pages 6 and 7.
- Follow the item 2 (Step 1 ~ Step 9) in main component procedures on pages 8 and 9.



Step 1

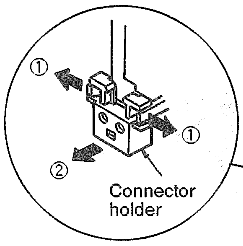
Step 2
Unsolder the terminals.

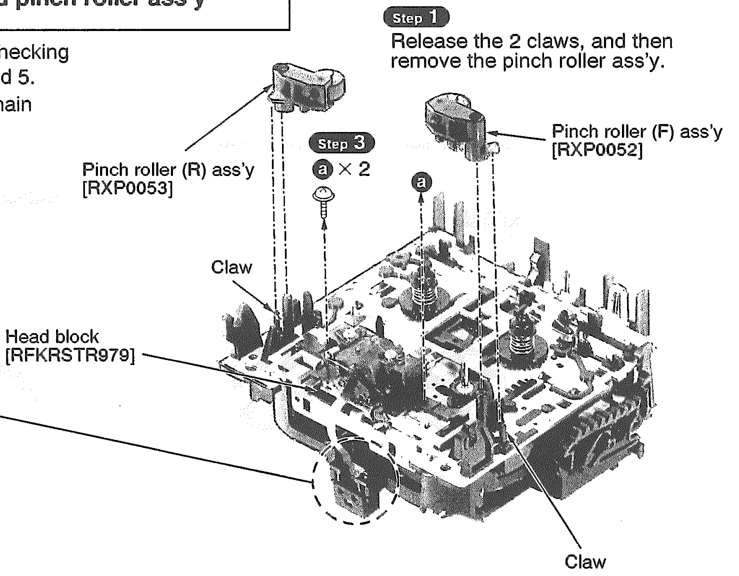
Step 3
Remove the mechanism P.C.B..

4. Replacement for the head block and pinch roller ass'y

- Follow the item 1 (Step 1 ~ Step 6) in checking procedures for each P.C.B. on pages 4 and 5.
- Follow the item 1 (Step 1 ~ Step 11) in main component procedures on pages 6 and 7.

Step 2
Remove the connector holder.


①
①
②
Connector holder


Pinch roller (R) ass'y [RXP0053]
Pinch roller (F) ass'y [RXP0052]
a × 2
a
Claw
Head block [RFKRSTR979]
Claw

Step 1
Release the 2 claws, and then remove the pinch roller ass'y.

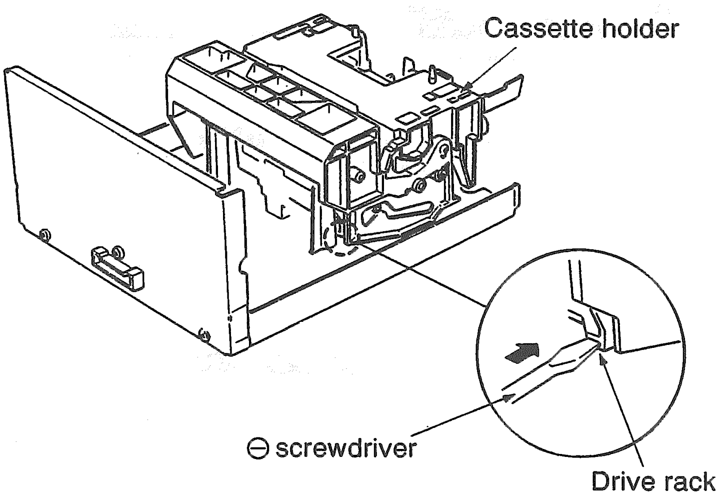
Step 3

● Manually opening and closing the cassette holder assembly

● Follow the item 1 (Step 1 ~ Step 5) in checking procedures for each P.C.B. on pages 4 and 5.

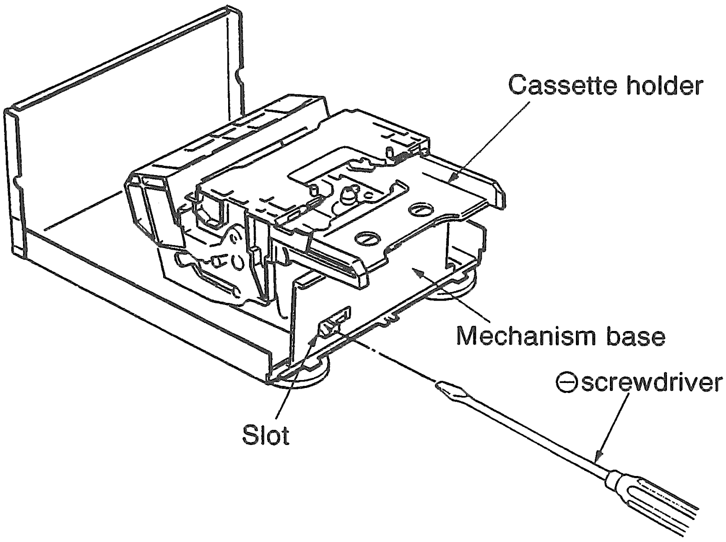
OPENING

Push the drive rack in the direction of the arrow with a ⊖screwdriver.


Cassette holder
⊖ screwdriver
Drive rack

CLOSING

Push the drive rack back into position by inserting a ⊖screwdriver into the holes on the P.C.B.


Cassette holder
Mechanism base
⊖screwdriver
Slot

Measurements and Adjustments

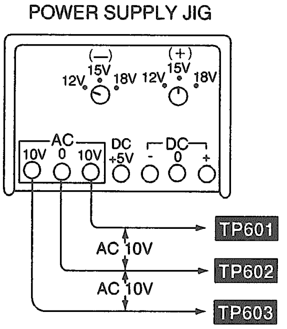
This unit RS-HD81 is designed to operate on power supplied from the Amplifier (SE-HD51 or SE-HD81) through Tuner (ST-HD51 or ST-HD81).
When connecting the unit to other system components, do not connect to the Amplifier (SE-HD81) directly. Be sure to connect this unit through the Tuner (ST-HD51 or ST-HD81).
When operating the unit RS-HD81 alone for testing and servicing, without having power supplied from the Amplifier (SE-HD51 or SE-HD81) and Tuner (ST-HD51 or ST-HD81), use the following method.

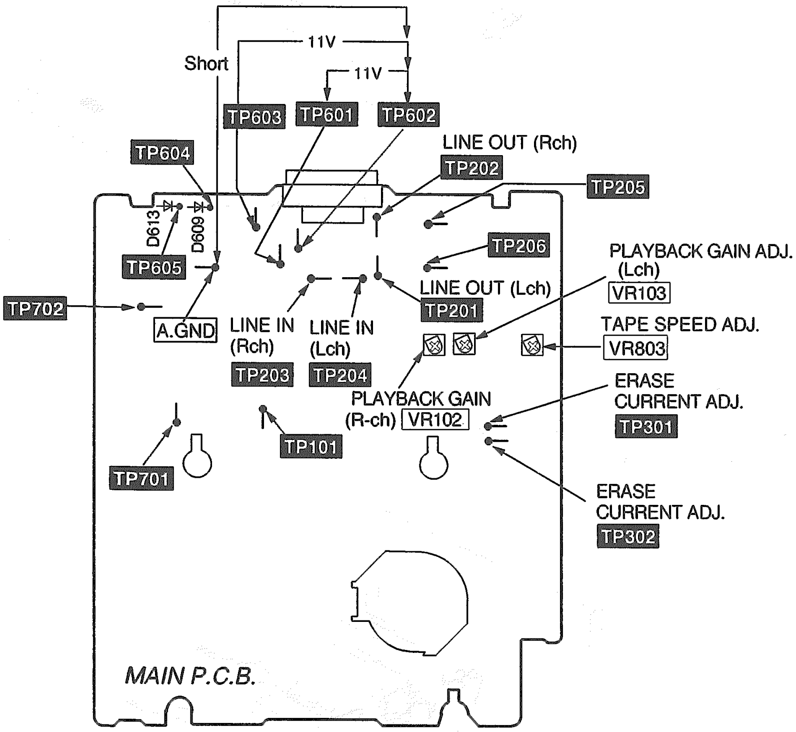
● To Supply Power Source

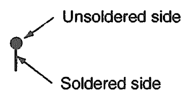
1. Short three sections the test points TP602, A. GND, and TP702.
2. Apply 11 AC power to test points between TP601 and TP602 (GND), and TP603 and TP602 (GND).
   Note: When operated alone, this unit automatically enter the TEST mode, causing indicators to blink.

● To Check Signals

Connect an oscilloscope or a built-in amplifier speaker between line output for Lch (TP201) and jumper (J118) A. GND, and line out for Rch (TP202) and jumper (J118) A. GND and check if the signals are outputting from this unit.


POWER SUPPLY JIG
(–)
(+)
12V
15V
18V
AC
10V
0
10V
DC
+5V
DC
-
0
+
TP601
AC 10V
TP602
AC 10V
TP603


Short
11V
11V
TP603
TP601
TP602
TP604
LINE OUT (Rch)
TP202
TP205
D613
D609
TP206
PLAYBACK GAIN ADJ.
(Lch)
VR103
TP605
LINE OUT (Lch)
TP201
TP702
A.GND
LINE IN
(Rch)
LINE IN
(Lch)
TAPE SPEED ADJ.
VR803
TP203
TP204
ERASE
CURRENT ADJ.
PLAYBACK GAIN
(R-ch) VR102
TP301
TP101
TP701
ERASE
CURRENT ADJ.
TP302
MAIN P.C.B.


Unsoldered side
Soldered side

Note:
The above symbol indicates a jumper soldered on one side. When this jumper is levered up using a ⊖ screwdriver, its unsoldered side is raised so that it can be seized with an alligator clip.

Fig. 1

Measurement Condition
- Dolby NR switch; OFF
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature 20 ± 5°C (68± 9°F)

Measuring instrument
- EVM (Electronic Voltmeter)
- AF oscillator
- Digital frequency counter

Test Tape
- Head azimuth adjustment (8kHz, –20dB); QZZCFM
- Tape speed adjustment (3kHz, –10dB); QZZCWAT
- Recording/ playback frequency response adjustment;
  QZZCFM (315Hz/0dB, 315Hz/–20dB, 12.5kHz~63Hz/–20dB)
  Normal blank tape
  CrO2 blank tape
  Metal blank tape

HEAD AZIMUTH ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 2.
2. Replace azumuth screws for both forward and reverse direction after removing the screw-locking bond left on the head base.
   Fine adjustment of azimuth can not be performed with remaining the bond on the head base.
   (Supply part No. of azimath adjusting screw: **RHD17015**)
3. Playback the azimuth adjustment portion (8kHz, −20dB) of test tape (QZZCFM). Adjust the azimuth adjusting screw until the outputs of the L/R-ch are maximized. (Refer to Fig. 3.)
   Make sure that the difference in the peak level between the left and right channels does not exceed 0.5dB.
4. Perform the same adjustment in reverse playback mode.

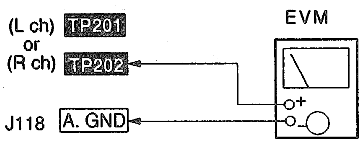


Fig. 2

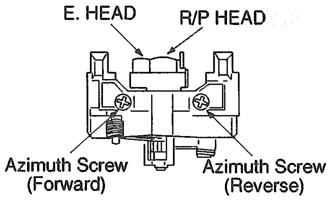


Fig. 3

Check of the level difference forward and reverse directions

5. Playback the playback gain adjustment portion (315 Hz, 0dB) of test tape (QZZCFM). Check if level difference between forward and reverse direction is within 1.5 dB.
6. After the adjustment, apply screwlock to the azimuth adjusting screw.

TAPE SPEED ADJUSTMENT

Note: When connecting the unit to other system components for testing, short the section between the test points TP701 and TP702 and turn on the entire system. (The unit is set to the TEST mode, indicators will blink.)

Normal speed (Standard value: 3000 ± 45Hz)

1. Connect the measuring instrument as shown in Fig. 4.
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust **VR803** for the output value shown below. (Refer to Fig. 1)

Adjustment target: 3000 ± 15Hz
Standard value: 3000 ± 45Hz

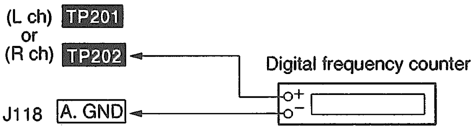


Fig. 4

Note: When connecting the unit to other system components, disconnect the short between the test points TP701 and TP702.

PLAYBACK GAIN ADJUSTMENT

1. Connect the measuring instrument as shown in Fig. 5.
2. Find the start of the 315Hz/0dB section of the test tape (QZZCFM), insert the tape, and play it back (FWD).
3. Adjust **VR103** (Lch) [**VR102** (Rch)] so that the output is within the standard value. (Refer to Fig. 1).

Standard value: 265mV ± 300mV

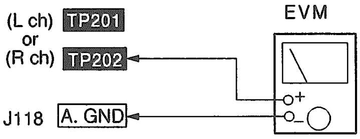


Fig. 5

ERASE CURRENT CONFIRMATION

1. Connect the measuring instrument as shown in Fig. 6.
2. Insert the blank tape, and press the REC PAUSE button.
3. Check if the output at this time between the erase current confirmation point TP301 and TP302 (the output on both edged of R313) is within the standard value.

Standard value		**EVM reading**
Normal tape	**: 75 ± 25 mA**	**(75 ± 25 mA)**
CrO_2 tape	**: 110 ± 25 mA**	**(110 ± 25 mA)**
Metal tape	**: 180 ± 25 mA**	**(180 ± 25 mA)**

Note: The test tape is not required when confirming the erase current.

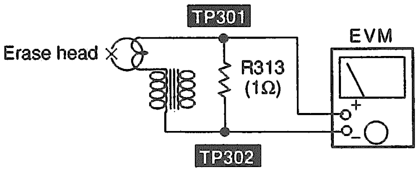


Fig. 6

Playback frequency response check

1. Connect the measuring instrument as shown in Fig. 7
2. Playback the 315Hz/–20dB and 12.5 kHz to 63 Hz/–20dB sections of the test tape (QZZCFM) and then, using the 315 Hz/–20dB playback output as a reference (0 dB), confirm that the playback frequency response is within the range shown in Fig. 8.

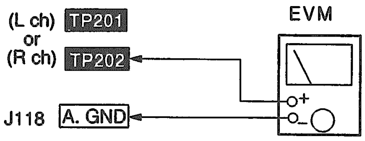


Fig. 7

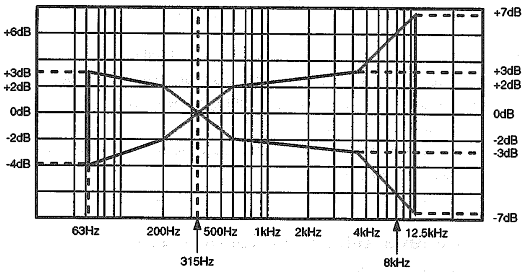


Fig. 8

Recordnig/playback frequency response and gain check

Normal tape check

1. Connect the measuring instrument as shown in Fig. 9.
2 Insert a Normal-type blank tape.
3. Record signals at 50 Hz, 100Hz, 200 Hz, 500 Hz, 1kHz, 2kHz, 10kHz and 12.5 kHz (28mV).
4. Set the playback frequency of the recorded signals at 1kHz as the reference response (0 dB).
5. Playback the recorded signals to confirm that the output is within the range of the overall frequency response shown in Fig. 10.

CrO2/ Metal tape check

6. Repeat steps 3 to 5 for each tape and confirm that the output for each is within the range of the overall frequency response shown in Fig. 11.

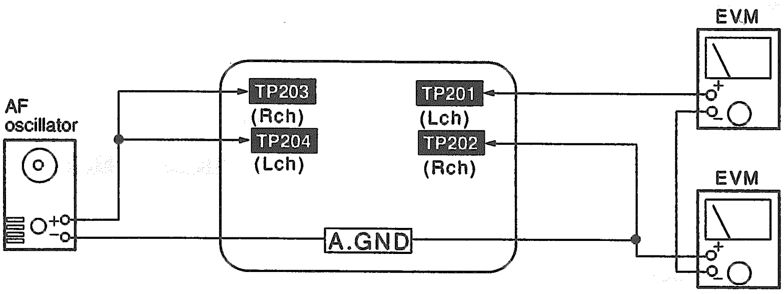


Fig. 9

Normal Overall frequency response chart (NR OUT)

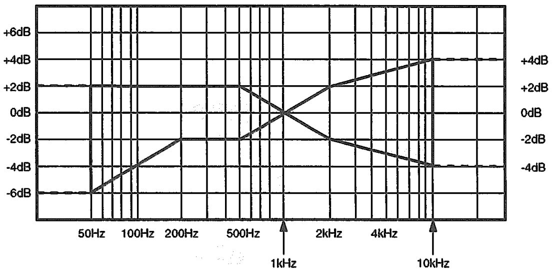


Fig. 10

CrO2/ Metal Overall frequency response dhart (NR OUT)

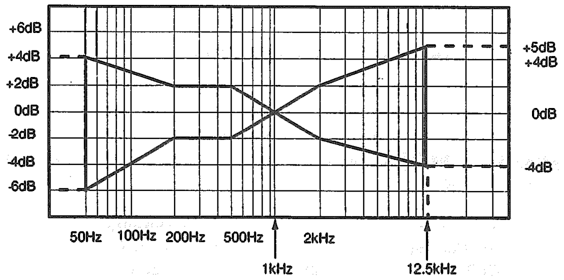
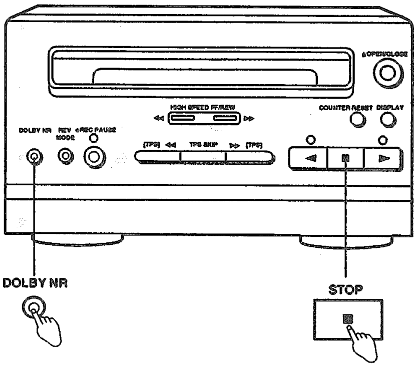


Fig. 11

■ Service Mode Function of Cassette Mechanism

This unit is equipped with a service mode function of cassette mechanism using the LED indicators [R. PLAY (◀), F. PLAY (▶), REW (◀◀), FF(▶▶)]. Use this function during maintenance to check faults of the items below.



● Cassette tapes to be prepared

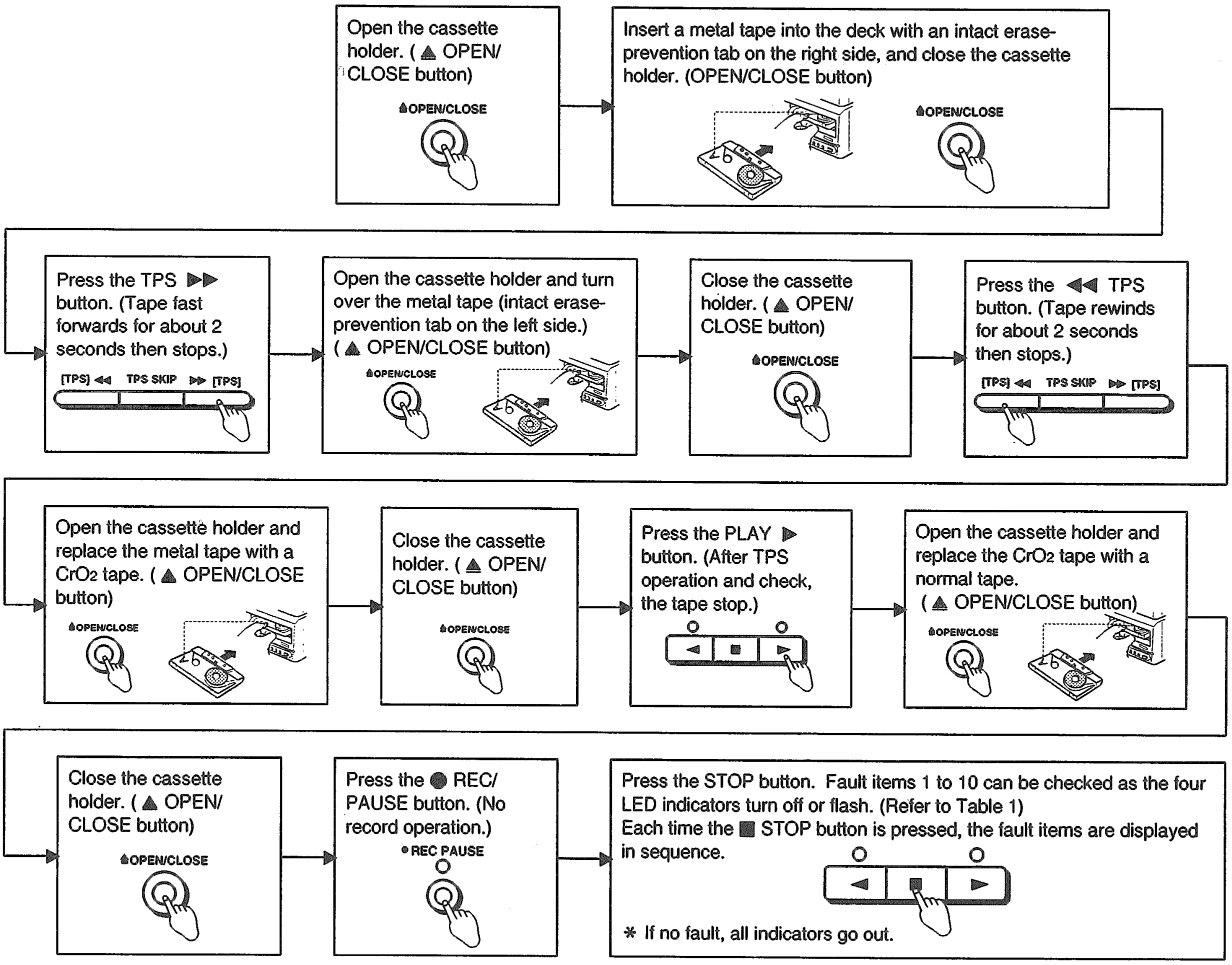
Metal tape: Recorded music tape with only one erase-prevention tab intact (use middle portion of the tape).

Normal tape: } Recorded music tape with both erase-prevention tabs intact (use middle
$\mathrm{CrO_2}$ tape: } portion of the tape).

● Selecting Service Mode

1. Turn on the power to the unit. (If RS-HD81 unit is removed from system, turn it on according to the procedure on page 12.)
2. Check that no tape is inserted in the cassette deck.
   Press the DOLBY NR button for about 2 seconds, and keep pressing it, also press the STOP button for about 2 seconds. (Service mode cannot be selected with a tape inserted in the cassette deck.)
3. The LED indicator for REC PAUSE flashes, the service mode has been activated.

● Mechanism Check



Open the cassette holder. (▲ OPEN/CLOSE button)

Insert a metal tape into the deck with an intact erase-prevention tab on the right side, and close the cassette holder. (OPEN/CLOSE button)

Press the TPS ▶▶ button. (Tape fast forwards for about 2 seconds then stops.)

Open the cassette holder and turn over the metal tape (intact erase-prevention tab on the left side.) (▲ OPEN/CLOSE button)

Close the cassette holder. (▲ OPEN/CLOSE button)

Press the ◀◀ TPS button. (Tape rewinds for about 2 seconds then stops.)

Open the cassette holder and replace the metal tape with a $\mathrm{CrO_2}$ tape. (▲ OPEN/CLOSE button)

Close the cassette holder. (▲ OPEN/CLOSE button)

Press the PLAY ▶ button. (After TPS operation and check, the tape stop.)

Open the cassette holder and replace the $\mathrm{CrO_2}$ tape with a normal tape. (▲ OPEN/CLOSE button)

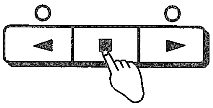
Close the cassette holder. (▲ OPEN/CLOSE button)

Press the ● REC/PAUSE button. (No record operation.)

Press the STOP button. Fault items 1 to 10 can be checked as the four LED indicators turn off or flash. (Refer to Table 1)
Each time the ■ STOP button is pressed, the fault items are displayed in sequence.

* If no fault, all indicators go out.

● Exiting-Self-Check Mode



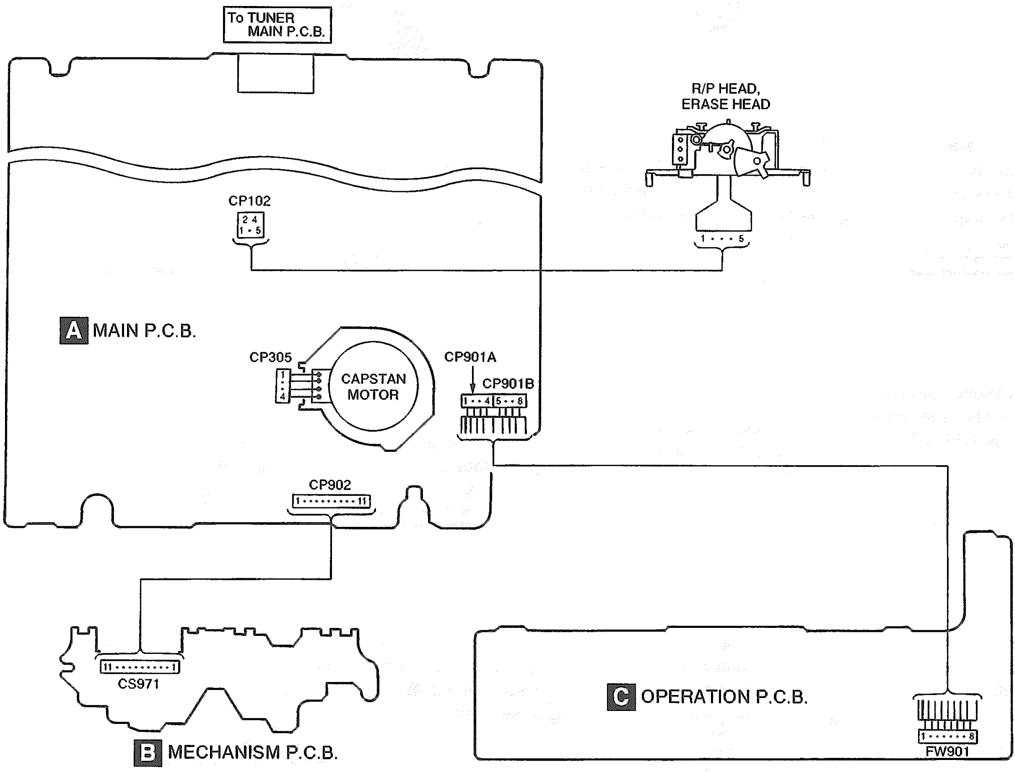
1. Press the ■ STOP button for more than 5 seconds. (Diagnostic contents stored in memory are erased.)
2. Remove the cassette tape from the cassette holder.
3. Turn off the unit.

No.	LED indicator status (off/flashing)				Fault location
	◀	▶	◀◀	▶▶	
1.	—	—	—	●	MODE detect switch
2.	—	—	●	—	REC prevention switch
3.	—	—	●	●	Half detect switch
4.	—	●	—	—	Deck OPEN switch
5.	—	●	—	●	Deck CLOSE switch
6.	—	●	●	—	CrO_2 tape detect switch
7.	—	●	●	●	Metal tape detect switch
8.	●	—	—	—	Reel pulse detect system (Hall IC, etc.)
9.	●	—	—	●	TPS operation
10.	●	—	●	—	Reel motor

Table 1: Service Mode Diagnostic Items

Notes:
"●" : Flashing
"—" : off
* If no fault, all indicators go out.

Wiring Connection Diagram


To TUNER MAIN P.C.B.
R/P HEAD, ERASE HEAD
CP102
A MAIN P.C.B.
CP305
CAPSTAN MOTOR
CP901A
CP901B
CP902
CS971
B MECHANISM P.C.B.
C OPERATION P.C.B.
FW901

■ Schematic Diagram (Parts list on pages 28 ~ 30.)

- This schematic diagram may be modified at any time with development of new technology.

Page
A MAIN CIRCUIT .... 18~20
B MECHANISM CIRCUIT 19
C OPERATION CIRCUIT 21

Notes:

- **S803**: Cassette holder open detection switch in “off” position.
- **S804**: Cassette holder close detection switch in “off” position.
- **S900**: Stop (■) switch.
- **S901**: Dolby noise-reduction switch (DOLBY NR).
- **S902**: Rewind tape program sensor switch (◀◀ [TPS]).
- **S903**: Reverse-side playback switch (◀).
- **S904**: TPS skip switch (TPS SKIP).
- **S905**: Forward-side playback switch (▶).
- **S906**: Fast forward tape program sensor switch (▶▶ [TPS]).
- **S909**: Rec pause switch (● REC PAUSE).
- **S910**: Cassette holder open/ close switch (▲ OPEN/ CLOSE).
- **S911**: Counter display switch (DISPLAY).
- **S912**: Counter reset switch (RESET).
- **S915**: Reverse-mode select switch (REV. MODE).
- **S971**: Mode switch in “off” position.
- **S972**: Half switch in “off” position.
- **S973**: ATS (CrO_2) switch in “off” position.
- **S974**: Reverse rec. inhibit switch in “off” position.
- **S975**: Forward rec. inhibit switch in “off” position.
- **S976**: ATS (Metal) switch in “off” position.

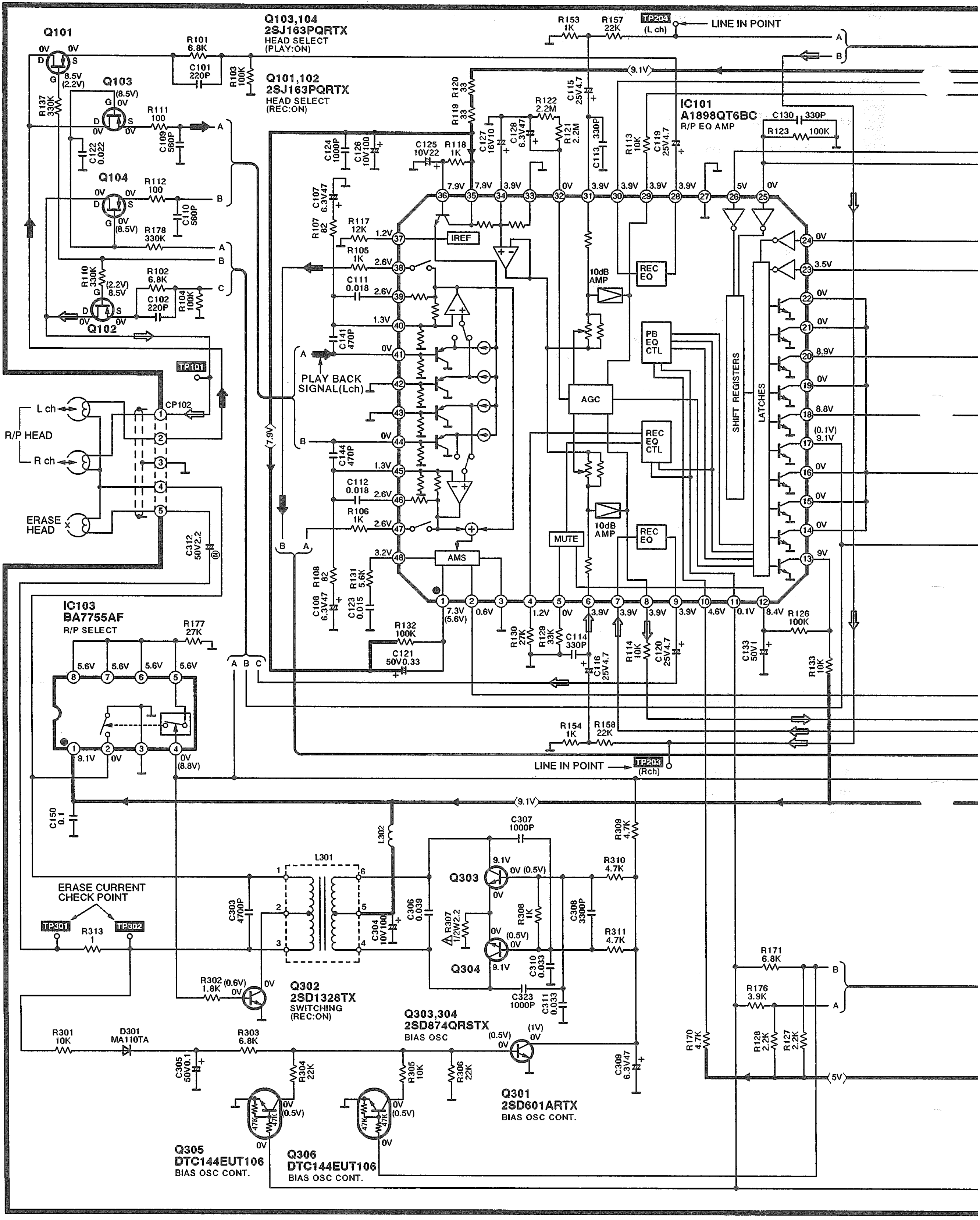
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
  1K=1,000 (Ω), 1M=1,000 (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  (   ).....Voltage values at record mode.
  For measurement us EVM.
- Voltage values and waveforms are measured as indicated in the schematic diagram when test points between TP604 and TP605, and between A. GND and TP602 are shorted.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  When replacing any of components, be sure to use only manufacture’s specified parts shown in the parts list.
- ⇢ : Positive voltage line
  → : Negative voltage line
  ➡ : Playback signal line
  ⇨ : Recording signal line

● Caution!

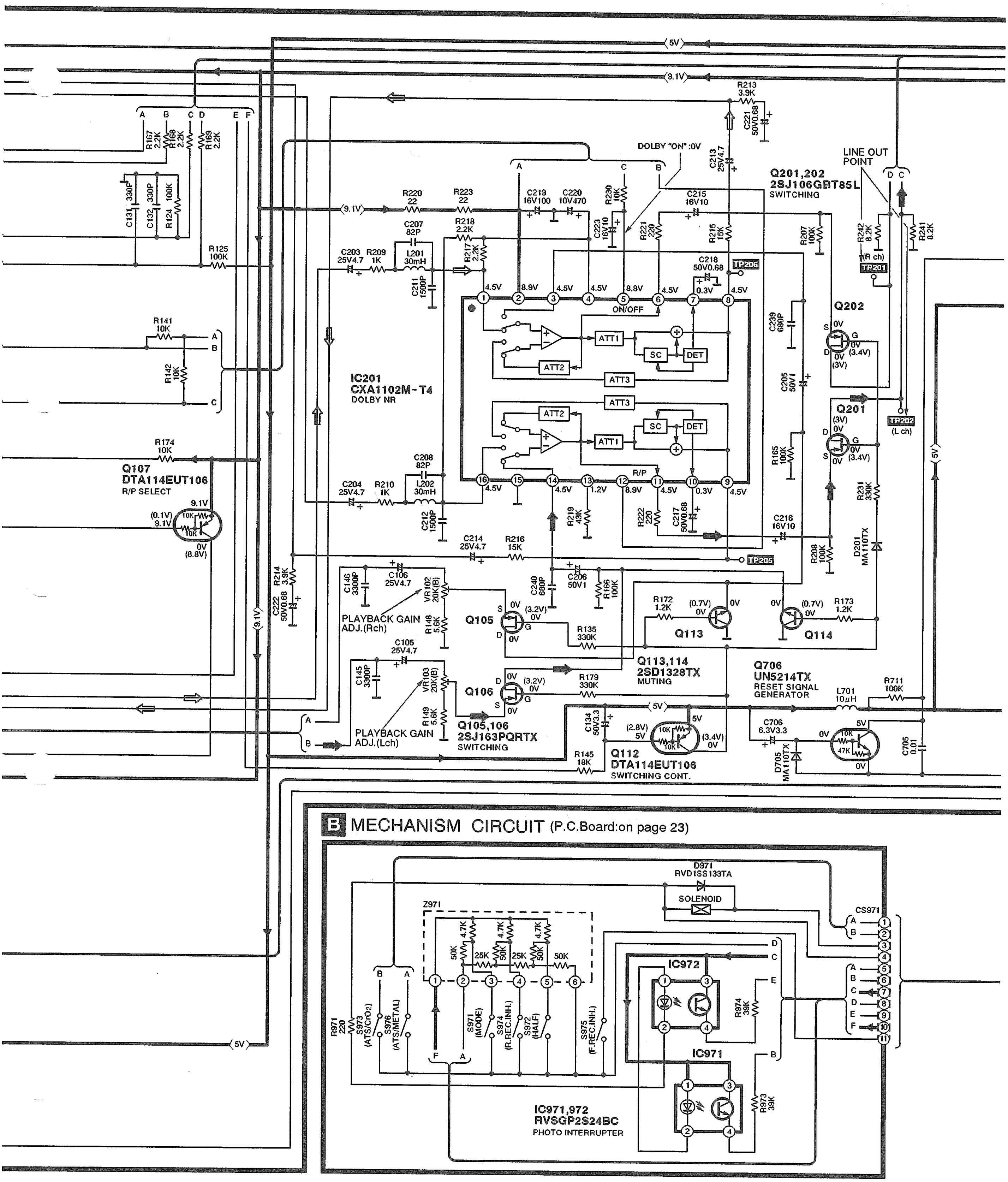
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering Iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.

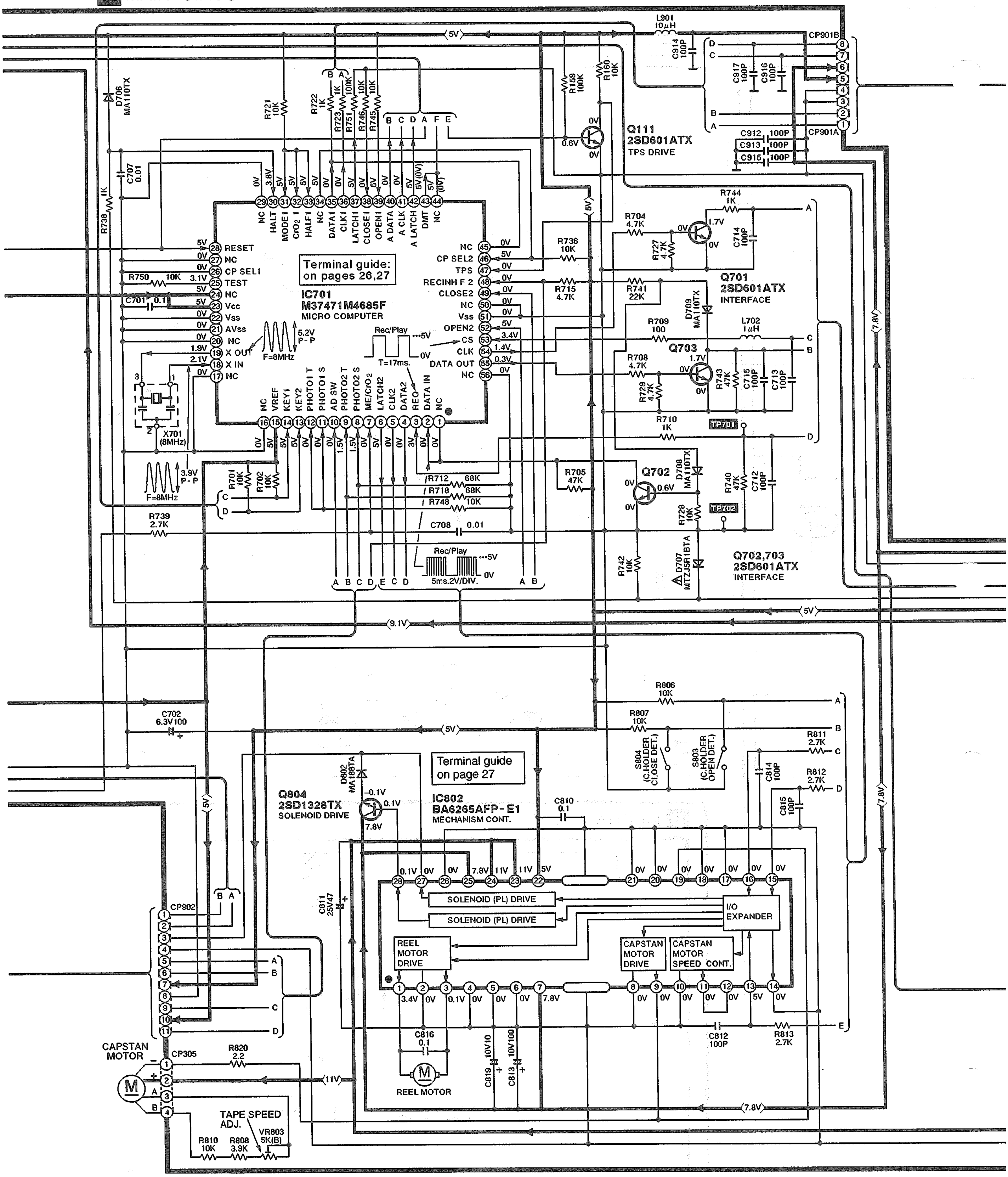
A MAIN CIRCUIT (P.C.Board:on page 22)


Q101
Q103,104
2SJ163PQRTX
HEAD SELECT
(PLAY:ON)
Q101,102
2SJ163PQRTX
HEAD SELECT
(REC:ON)
Q103
Q104
Q102
R101 6.8K
C101 220P
R103 100K
R137 330K
R111 100
R112 100
C109 560P
C110 560P
C122 0.022
R178 330K
R110 330K
R102 6.8K
C102 220P
R104 100K
R120 33
R119 33
TP101
CP102
L ch
R ch
R/P HEAD
ERASE HEAD
C312 50V2.2
PLAY BACK SIGNAL(Lch)
IC101
A1898QT6BC
R/P EQ AMP
C130 330P
R123 100K
R153 1K
R157 22K
TP204
(L ch)
LINE IN POINT
R122 2.2M
R121 2.2M
C115 25V4.7
C113 330P
R113 10K
C119 25V4.7
C124 1000P
C126 10V100
C125 10V22
R118 1K
C127 16V10
C128 6.3V47
C107 6.3V47
R107 82
R117 12K
R105 1K
C111 0.018
C141 470P
C144 470P
C112 0.018
R106 1K
R108 82
C108 6.3V47
R131 5.6K
C123 0.015
R132 100K
C121 50V0.33
IREF
10dB AMP
REC EQ
PB EQ CTL
AGC
REC EQ CTL
MUTE
AMS
SHIFT REGISTERS
LATCHES
R130 27K
R129 33K
C114 330P
C116 25V4.7
R114 10K
C120 25V4.7
C133 50V1
R126 100K
R133 10K
R154 1K
R158 22K
TP203
(Rch)
IC103
BA7755AF
R/P SELECT
R177 27K
C150 0.1
L302
L301
C303 4700P
C304 10V100
C306 0.039
C307 1000P
Q303
Q304
R307 1/2W2.2
R308 1K
C308 3300P
C310 0.033
C323 1000P
C311 0.033
R309 4.7K
R310 4.7K
R311 4.7K
ERASE CURRENT CHECK POINT
TP301
TP302
R313 1
R302 1.8K
Q302
2SD1328TX
SWITCHING
(REC:ON)
Q303,304
2SD874QRSTX
BIAS OSC
R301 10K
D301 MA110TA
R303 6.8K
C305 50V0.1
R304 22K
R305 10K
R306 22K
C309 6.3V47
Q301
2SD601ARTX
BIAS OSC CONT.
Q305
DTC144EUT106
BIAS OSC CONT.
Q306
DTC144EUT106
BIAS OSC CONT.
R171 6.8K
R176 3.9K
R170 4.7K
R128 2.2K
R127 2.2K
(9.1V)
(7.9V)
(5V)

Note • ⇨: Recording signal • ➡: Playback signal

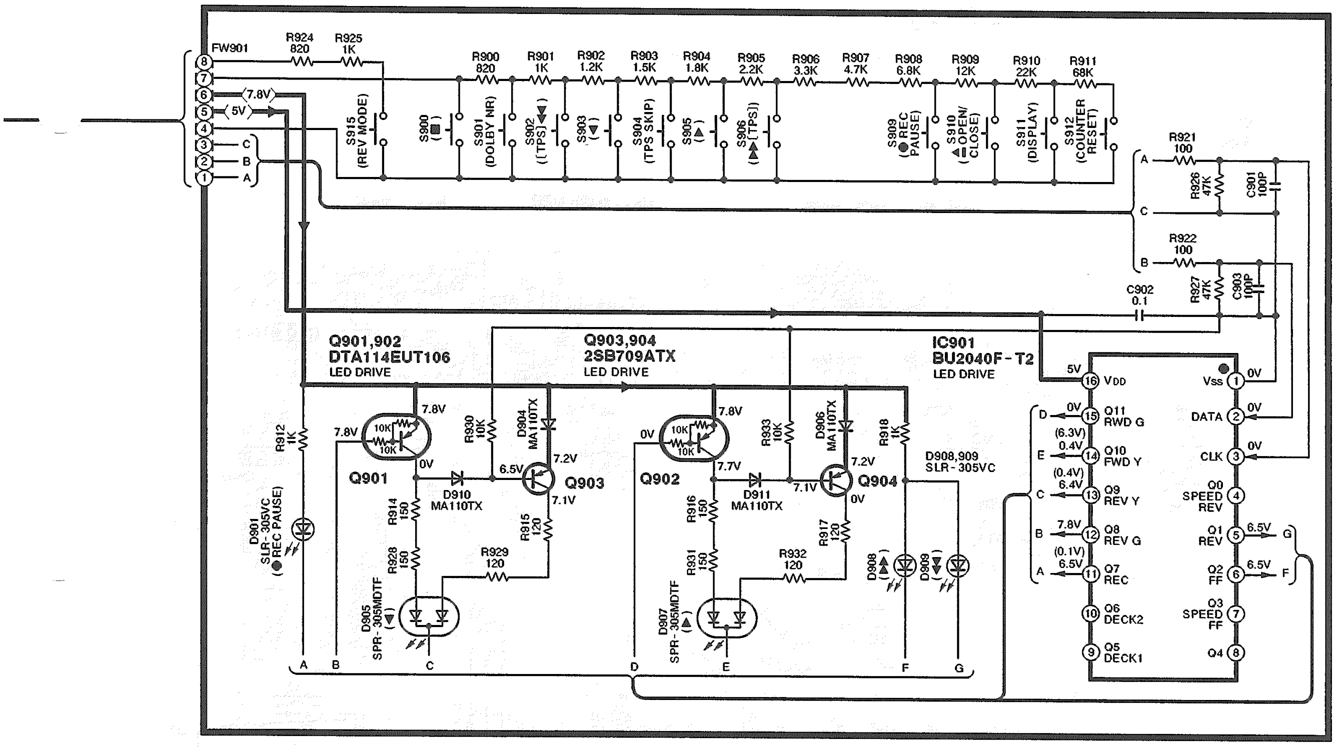

5V
9.1V
R213 3.9K
C221 50V0.68
R167 2.2K
R168 2.2K
R169 2.2K
C131 330P
C132 330P
R124 100K
R125 100K
DOLBY "ON" :0V
C213 25V4.7
LINE OUT POINT
Q201,202 2SJ106GBT85L SWITCHING
R220 22
R223 22
R218 2.2K
C207 82P
C203 25V4.7
R209 1K
L201 30mH
C211 1500P
R217 2.2K
C219 16V100
C220 10V470
R230 10K
C223 16V10
R221 220
C215 16V10
R215 15K
C218 50V0.68
TP206
R207 100K
R242 8.2K
R241 8.2K
(R ch)
TP201
ON/OFF
ATT1
ATT2
ATT3
SC
DET
R/P
IC201 CXA1102M-T4 DOLBY NR
R141 10K
R142 10K
C239 680P
Q202
C205 50V1
Q201
TP202 (L ch)
R165 100K
R174 10K
Q107 DTA114EUT106 R/P SELECT
C208 82P
C204 25V4.7
R210 1K
L202 30mH
C212 1500P
R219 43K
R222 220
C217 50V0.68
C216 16V10
R208 100K
D201 MA110TX
R231 330K
C214 25V4.7
R216 15K
TP205
R214 3.9K
C222 50V0.68
C146 3300P
C106 25V4.7
VR102 20K(B)
PLAYBACK GAIN ADJ.(Rch)
R148 5.6K
Q105
C240 680P
C206 50V1
R166 100K
R172 1.2K
R173 1.2K
Q113
Q114
R135 330K
C105 25V4.7
C145 3300P
VR103 20K(B)
Q106
R179 330K
Q113,114 2SD1328TX MUTING
Q706 UN5214TX RESET SIGNAL GENERATOR
L701 10μH
R711 100K
R149 5.6K
PLAYBACK GAIN ADJ.(Lch)
Q105,106 2SJ163PQRTX SWITCHING
C134 50V3.3
Q112 DTA114EUT106 SWITCHING CONT.
R145 18K
C706 6.3V3.3
D705 MA110TX
C705 0.01
B MECHANISM CIRCUIT (P.C.Board:on page 23)
D971 RVD1SS133TA
SOLENOID
CS971
Z971
IC972
IC971
R974 39K
R973 39K
R971 220
S973 (ATS/CrO2)
S976 (ATS/METAL)
S971 (MODE)
S974 (R.REC.INH.)
S972 (HALF)
S975 (F.REC.INH.)
IC971,972 RVSGP2S24BC PHOTO INTERRUPTER

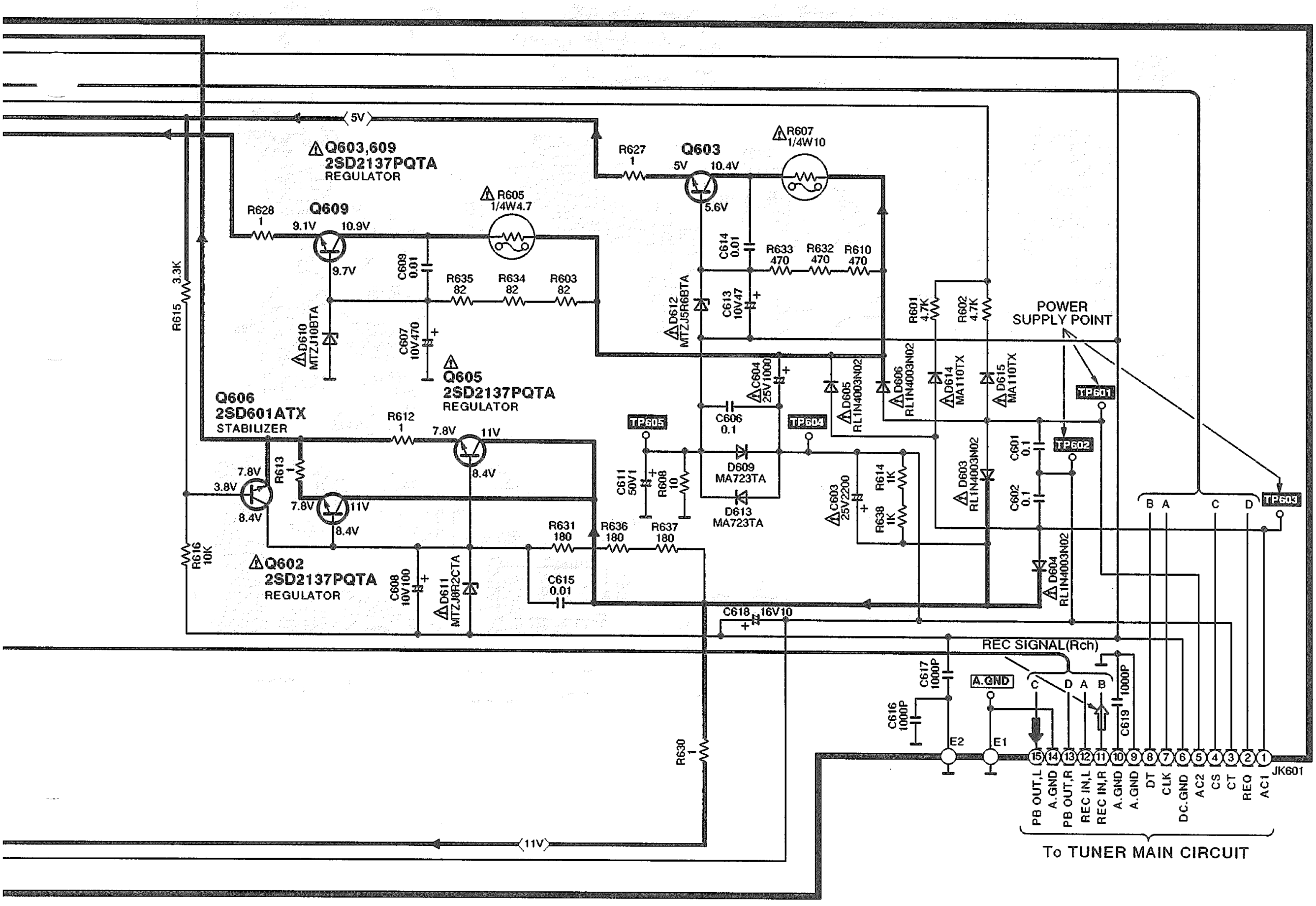
A MAIN CIRCUIT (P.C.Board:on page 22)


L901 10µH
CP901B
CP901A
C314 100P
C917 100P
C916 100P
C912 100P
C913 100P
C915 100P
R159 100K
R160 10K
Q111
2SD601ATX
TPS DRIVE
0.6V
D706 MA110TX
R721 10K
R722 1K
R723 1K
R751 100K
R746 10K
R745 10K
C707 0.01
R738 1K
R750 10K
C701 0.1
X701 (8MHz)
F=8MHz
5.2V P-P
3.9V P-P
Terminal guide: on pages 26,27
IC701
M37471M4685F
MICRO COMPUTER
Rec/Play
T=17ms.
RESET
NC
CP SEL1
TEST
Vcc
Vss
AVss
X OUT
X IN
HALT
MODE1
CrO2 1
HALF1
DATA1
CLK1
LATCH1
CLOSE1
OPEN1
A DATA
A CLK
A LATCH
DMT
CP SEL2
TPS
RECINH F 2
CLOSE2
OPEN2
CS
CLK
DATA OUT
VREF
KEY1
KEY2
PHOTO1 T
PHOTO1 S
AD SW
PHOTO2 T
PHOTO2 S
ME/CrO2
LATCH2
CLK2
DATA2
REQ
DATA IN
R701 10K
R702 10K
R739 2.7K
R712 68K
R718 68K
R748 10K
C708 0.01
5ms.2V/DIV.
R736 10K
R715 4.7K
R704 4.7K
R727 4.7K
R744 1K
C714 100P
Q701
2SD601ATX
INTERFACE
R741 22K
D709 MA110TX
L702 1µH
R709 100
R708 4.7K
R729 4.7K
Q703
R743 47K
C715 100P
C713 100P
R710 1K
TP701
R705 47K
Q702
D708 MA110TX
R740 47K
C712 100P
R728 10K
TP702
R742 10K
D707 MTZJ5R1BTA
Q702,703
2SD601ATX
INTERFACE
(5V)
(9.1V)
(7.8V)
C702 6.3V100
R806 10K
R807 10K
S804 (C.HOLDER CLOSE DET.)
S803 (C.HOLDER OPEN DET.)
R811 2.7K
C814 100P
R812 2.7K
C815 100P
Q804
2SD1328TX
SOLENOID DRIVE
D802 MA188TA
Terminal guide on page 27
IC802
BA6265AFP-E1
MECHANISM CONT.
C810 0.1
C811 25V47
SOLENOID (PL) DRIVE
SOLENOID (PL) DRIVE
I/O EXPANDER
REEL MOTOR DRIVE
CAPSTAN MOTOR DRIVE
CAPSTAN MOTOR SPEED CONT.
C816 0.1
REEL MOTOR
C819 10V10
C813 10V100
C812 100P
R813 2.7K
CP902
CAPSTAN MOTOR
CP305
R820 2.2
(11V)
TAPE SPEED ADJ.
R810 10K
R808 3.9K
VR803 5K(B)

Note ● ⟹: Recording signal ● ➡: Playback signal

C OPERATION CIRCUIT (P.C.Board:on page 23)

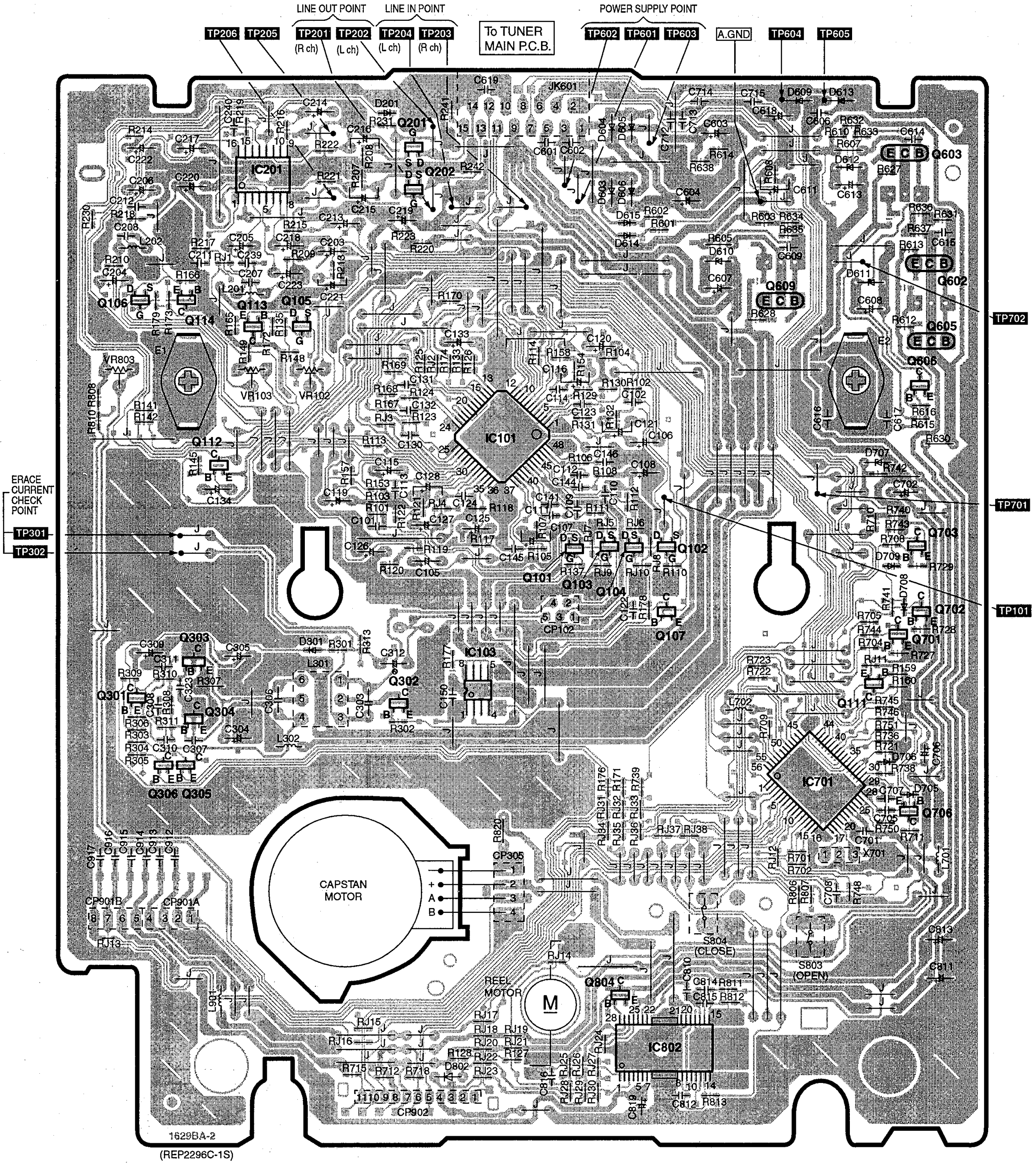

FW901
R924 820
R925 1K
R900 820
R901 1K
R902 1.2K
R903 1.5K
R904 1.8K
R905 2.2K
R906 3.3K
R907 4.7K
R908 6.8K
R909 12K
R910 22K
R911 68K
7.8V
5V
S915 (REV MODE)
S900 (■)
S901 (DOLBY NR)
S902 (TPS)
S903
S904 (TPS SKIP)
S905
S906 (TPS)
S909 (● REC PAUSE)
S910 (≜ OPEN/ CLOSE)
S911 (DISPLAY)
S912 (COUNTER RESET)
R921 100
R926 47K
C901 100P
R922 100
R927 47K
C903 100P
C902 0.1
Q901,902
DTA114EUT106
LED DRIVE
Q903,904
2SB709ATX
LED DRIVE
IC901
BU2040F-T2
LED DRIVE
5V
VDD
Vss
0V
Q11 RWD G
DATA
Q10 FWD Y
CLK
Q9 REV Y
Q0 SPEED REV
Q8 REV G
Q1 REV
6.5V
Q7 REC
Q2 FF
Q6 DECK2
Q3 SPEED FF
Q5 DECK1
Q4
(6.3V)
0.4V
(0.4V)
6.4V
7.8V
(0.1V)
6.5V
R912 1K
D901 SLR-305VC (● REC PAUSE)
Q901
Q902
Q903
Q904
10K
R930 10K
D904 MA110TX
7.2V
6.5V
7.1V
D910 MA110TX
R914 150
R915 120
R928 150
R929 120
D905 SPR-305MDTF
R933 10K
D906 MA110TX
R918 1K
7.7V
D911 MA110TX
R916 150
R917 120
R931 150
R932 120
D907 SPR-305MDTF
D908,909 SLR-305VC
D908
D909
A B C D E F G


5V
⚠Q603,609
2SD2137PQTA
REGULATOR
R627 1
Q603
10.4V
5.6V
⚠R607 1/4W10
R628 1
Q609
9.1V
10.9V
9.7V
⚠R605 1/4W4.7
C609 0.01
R635 82
R634 82
R603 82
C614 0.01
R633 470
R632 470
R610 470
C613 10V47
⚠D612 MTZJ5R6BTA
R615 3.3K
⚠D610 MTZJ10BTA
C607 10V470
⚠Q605
2SD2137PQTA
REGULATOR
R601 4.7K
R602 4.7K
POWER SUPPLY POINT
Q606
2SD601ATX
STABILIZER
R612 1
7.8V
11V
8.4V
R613
3.8V
⚠C604 25V1000
C606 0.1
D609 MA723TA
D613 MA723TA
C611 50V1
R608 10
⚠D605 RL1N4003N02
⚠D606 RL1N4003N02
⚠D614 MA110TX
⚠D615 MA110TX
⚠D603 RL1N4003N02
C601 0.1
C602 0.1
⚠C603 25V2200
R614 1K
R638 1K
⚠D604 RL1N4003N02
TP601
TP602
TP603
TP604
TP605
R616 10K
⚠Q602
2SD2137PQTA
REGULATOR
R631 180
R636 180
R637 180
C608 10V100
⚠D611 MTZJ8R2CTA
C615 0.01
C618 16V10
REC SIGNAL(Rch)
C617 1000P
C616 1000P
C619 1000P
A.GND
E1
E2
R630 1
11V
JK601
PB OUT,L
A.GND
PB OUT,R
REC IN,L
REC IN,R
A.GND
A.GND
DT
CLK
DC.GND
AC2
CS
CT
REQ
AC1
To TUNER MAIN CIRCUIT

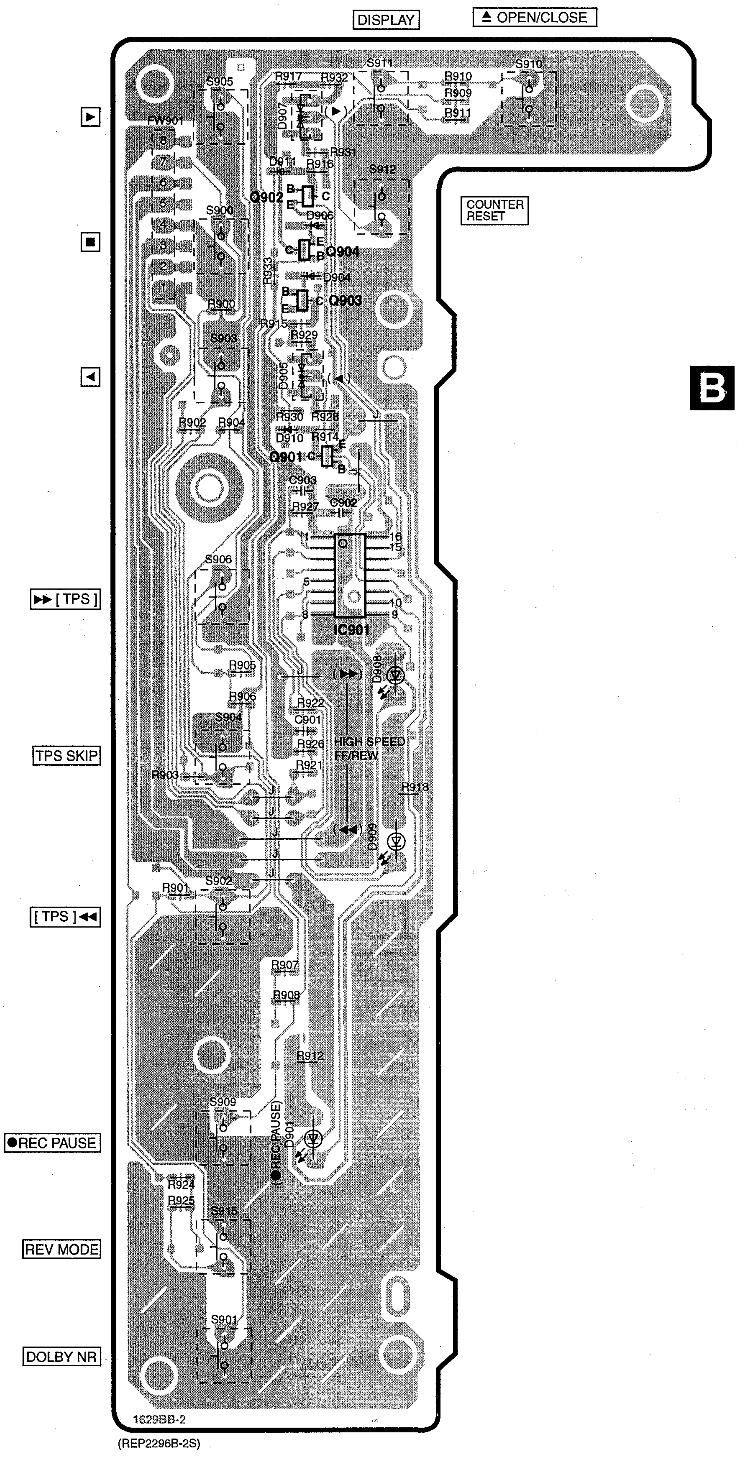
Printed Circuit Board Diagram

(This printed circuit board diagram may be modified at any time with the development of new technology.)

A MAIN P.C.B.

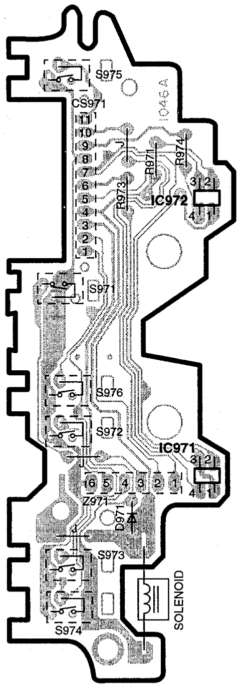

LINE OUT POINT
LINE IN POINT
POWER SUPPLY POINT
TP206
TP205
TP201
(R ch)
TP202
(L ch)
TP204
(L ch)
TP203
(R ch)
To TUNER
MAIN P.C.B.
TP602
TP601
TP603
A.GND
TP604
TP605
TP702
TP701
TP101
ERACE CURRENT CHECK POINT
TP301
TP302
IC201
IC101
IC103
IC701
IC802
CAPSTAN MOTOR
REEL MOTOR
M
S804 (CLOSE)
S803 (OPEN)
1629BA-2
(REP2296C-1S)

C OPERATION P.C.B.

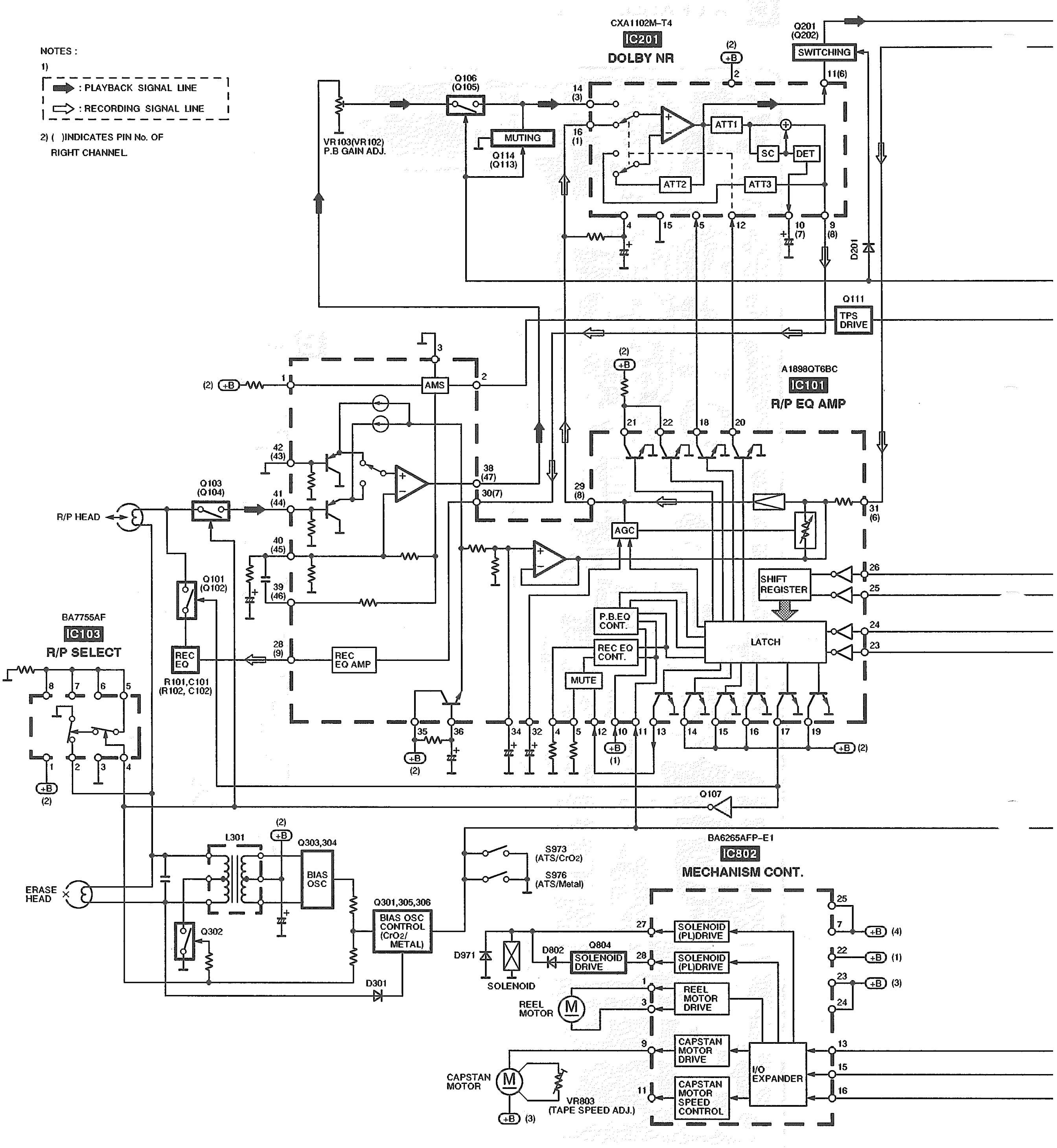

DISPLAY
≜ OPEN/CLOSE
COUNTER RESET
▶
■
◀
▶▶ [TPS]
TPS SKIP
[TPS] ◀◀
●REC PAUSE
REV MODE
DOLBY NR
FW901
S905
S900
S903
S906
S904
S902
S909
S915
S901
S911
S910
S912
R917
R932
R910
R909
R911
R931
R916
D907
D911
Q902
D906
Q904
D904
Q903
R933
R900
R915
R929
D905
R930
R928
D910
R914
Q901
C903
C902
R927
R902
R904
IC901
R905
R906
R922
C901
R926
R921
R903
R918
D908
D909
HIGH SPEED FF/REW
R901
R907
R908
R912
D901
(●REC PAUSE)
R924
R925
1629BB-2

(REP2296B-2S)

B MECHANISM P.C.B.


S975
CS971
R971
R974
R973
IC972
S971
S976
S972
IC971
Z971
D971
S973
S974
SOLENOID
1046A

(REP1656A)


CXA1102M-T4
IC201
DOLBY NR
Q201
(Q202)
SWITCHING
11(6)
(2)
+B
2
14
(3)
16
(1)
ATT1
SC
DET
ATT2
ATT3
4
15
5
12
10
(7)
9
(8)
D201
Q106
(Q105)
MUTING
Q114
(Q113)
VR103(VR102)
P.B GAIN ADJ.
Q111
TPS
DRIVE
A1898QT6BC
IC101
R/P EQ AMP
21
22
18
20
29
(8)
31
(6)
AGC
SHIFT
REGISTER
26
25
24
23
LATCH
P.B.EQ
CONT.
REC EQ
CONT.
MUTE
AMS
1
2
3
42
(43)
41
(44)
40
(45)
39
(46)
38
(47)
30(7)
28
(9)
REC
EQ AMP
35
36
34
32
4
5
12
10
11
13
14
15
16
17
19
+B (2)
+B (1)
Q103
(Q104)
R/P HEAD
Q101
(Q102)
REC
EQ
R101,C101
(R102, C102)
BA7755AF
IC103
R/P SELECT
8
7
6
5
1
2
3
4
+B
(2)
Q107
L301
Q303,304
BIAS
OSC
Q301,305,306
BIAS OSC
CONTROL
(CrO2/
METAL)
Q302
D301
ERASE
HEAD
S973
(ATS/CrO2)
S976
(ATS/Metal)
BA6265AFP-E1
IC802
MECHANISM CONT.
25
7
22
23
24
+B (4)
+B (1)
+B (3)
27
28
SOLENOID
(PL)DRIVE
SOLENOID
(PL)DRIVE
Q804
SOLENOID
DRIVE
D802
D971
SOLENOID
1
3
REEL
MOTOR
DRIVE
REEL
MOTOR
M
9
11
CAPSTAN
MOTOR
DRIVE
CAPSTAN
MOTOR
SPEED
CONTROL
I/O
EXPANDER
13
15
16
CAPSTAN
MOTOR
VR803
(TAPE SPEED ADJ.)
+B (3)

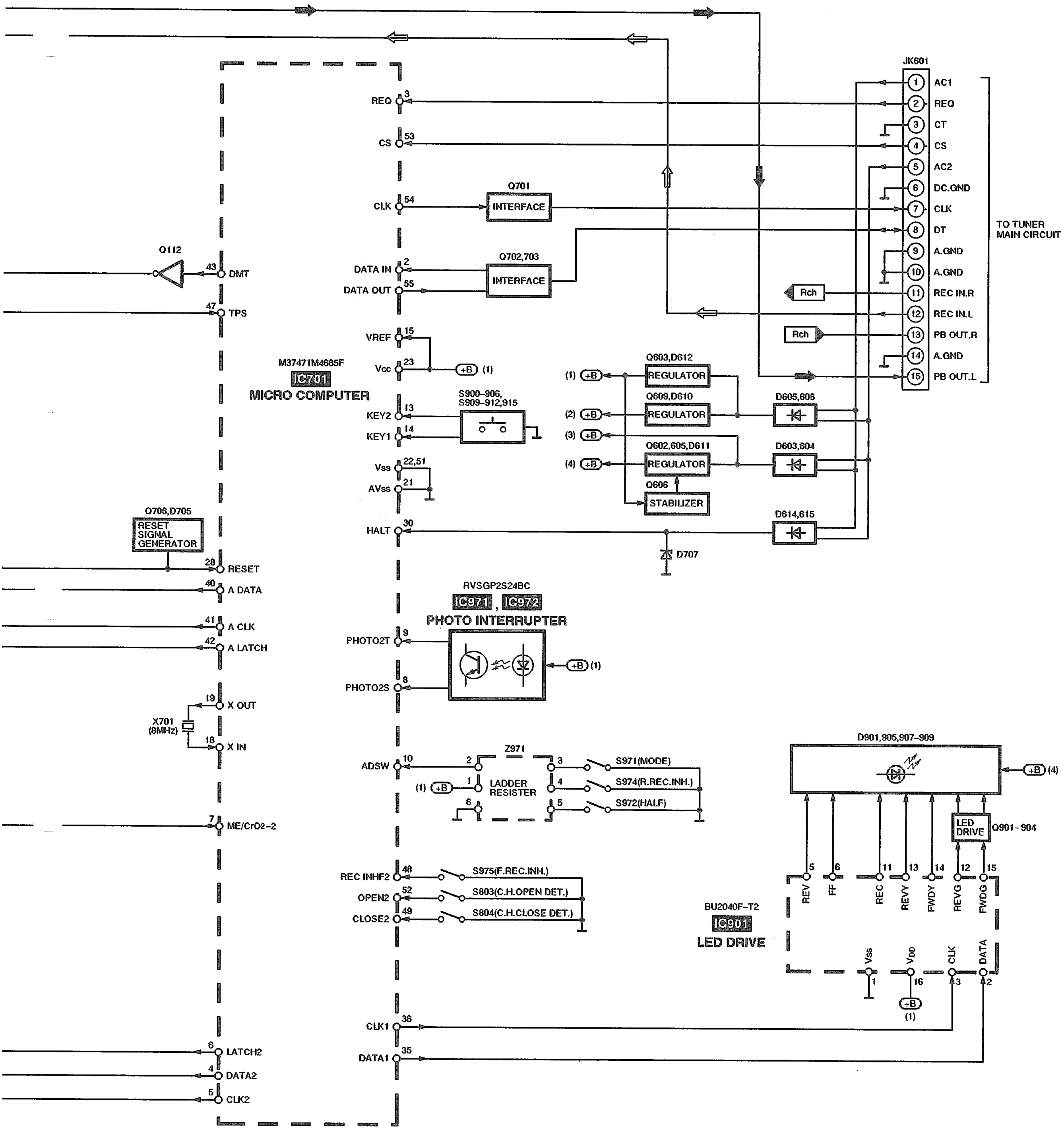
NOTES :

1)

➡ : PLAYBACK SIGNAL LINE

⇨ : RECORDING SIGNAL LINE

2) ( )INDICATES PIN No. OF RIGHT CHANNEL.


M37471M4685F
IC701
MICRO COMPUTER
REQ 3
CS 53
CLK 54
Q701
INTERFACE
DATA IN 2
DATA OUT 55
Q702,703
INTERFACE
VREF 15
Vcc 23
+B (1)
KEY2 13
KEY1 14
S900–906, S909–912,915
Vss 22,51
AVss 21
HALT 30
D707
Q112
43 DMT
47 TPS
Q706,D705
RESET SIGNAL GENERATOR
28 RESET
40 A DATA
41 A CLK
42 A LATCH
19 X OUT
X701 (8MHz)
18 X IN
7 ME/CrO2-2
6 LATCH2
4 DATA2
5 CLK2
RVSGP2S24BC
IC971, IC972
PHOTO INTERRUPTER
PHOTO2T 9
PHOTO2S 8
+B (1)
ADSW 10
Z971
LADDER RESISTER
(1) +B
S971(MODE)
S974(R.REC.INH.)
S972(HALF)
REC INHF2 48
OPEN2 52
CLOSE2 49
S975(F.REC.INH.)
S803(C.H.OPEN DET.)
S804(C.H.CLOSE DET.)
CLK1 36
DATA1 35
JK601
1 AC1
2 REQ
3 CT
4 CS
5 AC2
6 DC.GND
7 CLK
8 DT
9 A.GND
10 A.GND
11 REC IN.R
12 REC IN.L
13 PB OUT.R
14 A.GND
15 PB OUT.L
TO TUNER MAIN CIRCUIT
Rch
Rch
Q603,D612
REGULATOR
(1) +B
Q609,D610
REGULATOR
(2) +B
(3) +B
Q602,605,D611
REGULATOR
(4) +B
Q606
STABILIZER
D605,606
D603,604
D614,615
D901,905,907–909
+B (4)
LED DRIVE
Q901–904
BU2040F-T2
IC901
LED DRIVE
REV 5
FF 6
REC 11
REVY 13
FWDY 14
REVG 12
FWDG 15
Vss 1
VDD 16
+B (1)
CLK 3
DATA 2

Terminal Function of IC's

● IC701 (M37471M4685F): MICRO COMPUTER

Pin No.	Mark	I/O	Function
1	NC	–	Not used
2	DATA IN	I	Serial data input
3	REQ	I	Request signal input
4	DATA2	O	Mechanism control data output
5	CLK2	O	Mechanism control clock output
6	LATCH2	O	Mechanism control latch signal output
7	ME/CrO$_2$-2	I	Tape select switch input
8	PHOTO2_S	I	Reverse side reel pulse input
9	PHOTO2_T	I	Forward side reel pulse input
10	AD_SW	I	Mechanism switch signal input
11	PHOTO1_S	I	Reverse side reel pulse input
12	PHOTO1_T	I	Forward side reel pulse input
13	KEY2	I	Key switch signal input
14	KEY1	I	
15	VREF	I	Reference voltage input
16	NC	–	Not used
17	NC	–	Not used
18	XIN	I	Clock input
19	XOUT	O	Clock output
20	NC	–	Not used
21	AVSS	–	Connect to GND
22	VSS	–	Connect to GND
23	VCC	–	Power supply (+5V)
24	NC	–	Not used
25	TEST	I	Test mode select (Not used)
26	CP_SEL1	–	Not used
27	NC	–	Not used
28	RESET	I	Reset signal input

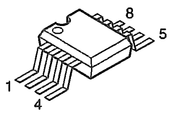
Pin No.	Mark	I/O	Function
29	NC	–	Not used
30	HALT	I	AC power source detect signal input
31	MODE1	I	Mode detect switch signal input
32	CrO2-1	I	Tape select switch signal input
33	HALF1	I	Half detect switch signal input
34	NC	–	Not used
35	DATA1	O	Control data output
36	CLK1	O	Control clock output
37	LATCH1	O	Mechanism control latch signal output
38	CLOSE1	I	Cassette holder close detect switch signal input
39	OPEN1	I	Cassette holder open detect switch signal input
40	A DATA	O	Serial data output
41	A CLK	O	Serial clock output
42	A LATCH	O	Latch signal output
43	DMT	O	Muting control signal output
44	NC	–	Not used
45	NC	–	Not used
46	CP_SEL2	–	Not used
47	TPS	I	TPS signal input
48	RECINH F_2	I	Record prevention tab detect switch signal input
49	CLOSE2	I	Cassette holder close detect switch signal input
50	NC	–	Not used
51	VSS	–	GND terminal
52	OPEN2	I	Cassette holder open detect switch signal input
53	CS	I	Serial data control signal input
54	CLK	O	Serial clock output
55	DATA OUT	O	Serial data output
56	NC	–	Not used

- **IC802 (BA6265AFP-E1): MECHANISM CONTROL**

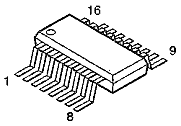
Pin No.	Mark	I/O	Function
1	RM(−)	O	Reel motor drive (−) output terminal
2	RNF	–	GND terminal
3	RM(+)	O	Reel motor drive (+) output terminal
4	NC	–	Not used, connected to GND
5	NC		
6	NC		
7	VCC2	I	Power supply terminal
8	CPM GND	–	GND terminal
9	CPM	O	Capstan motor drive output terminal
10	NC	–	Not used, connected to pin11
11	CPM SW	O	Capstan speed select SW output terminal
12	NC	–	Not used, connected to pin 11
13	LATCH	I	I/O expander latch signal input terminal
14	S0	O	I/O expander serial output terminal
15	DATA	I	I/O expander data signal input terminal
16	CLK	I	I/O expander clock signal input terminal
17	NC	–	Not used, connected to GND
18	NC	–	
19	NC	–	Not used, connected to pin 9
20	GND	–	GND terminal
21	GND	–	GND terminal
22	VCC1	I	Power supply terminal
23	VCC3	I	Power supply terminal
24	VCC3	I	Power supply terminal
25	NC	–	Not used, connected to power supply
26	GND	–	GND terminal
27	PL 15V	O	Plunger output terminal(15V)
28	PL 7.5V	O	Plunger output terminal(7.5V)

Type Illustrations of IC's Transistors and Diodes

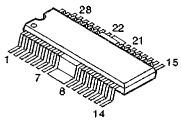
BA7755AF



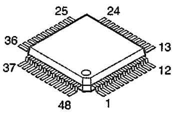
CXA1102M-T4
BU2040F-T2



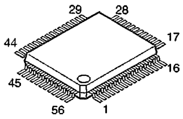
BA6265AFP-E1


28
22
21
15
1
7
8
14

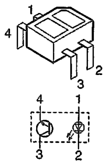
A1898QT6BC


25
24
36
13
37
12
48
1

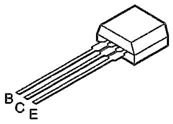
M37471M4685F

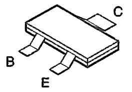

29
28
44
17
45
16
56
1

RVSGP2S24BC



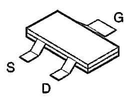
DTA114EUT106
DTC114EUT106



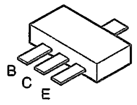


2SB709ATX
2SD1328TX
2SD601ARTX
2SD601ATX
UN5214TX

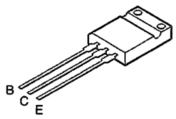
2SJ106GBT85L
2SJ163PQRTX



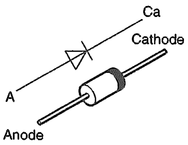
2SD874QRSTX



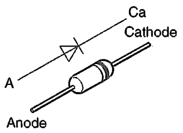
2SD2137PQTA



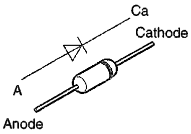
RL1N4003N02

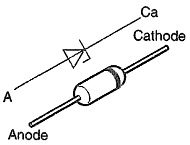

Ca
Cathode
A
Anode

MA188TA


Ca
Cathode
A
Anode

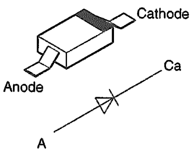
MA723TA
RVD1SS133TA


Ca
Cathode
A
Anode

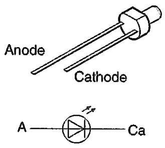

Ca
Cathode
A
Anode

MTZJ10BTA
MTZJ5R1BTA
MTZJ5R6BTA
MTZJ8R2CTA

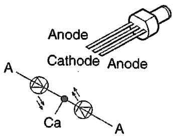
MA110TX


Cathode
Ca
Anode
A

SLR-305VC


Anode
Cathode
A
Ca

SPR-305MDTF


Anode
Cathode
Anode
A
Ca
A

■ Replacement Parts List

Notes: * Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.

* Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)

* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RHD30073-K	SCREW	4	
2	RGK0809-1M	SIDE PANEL(R)	1	
3	XTBS3+8JFZ1	SCREW	8	
4	RGK0810-N3	SIDE ORNAMENT(L)	1	
5	RGK0811-N3	SIDE ORNAMENT(R)	1	
6	RGK0808-1M	SIDE PANEL(L)	1	
7	RHD30069	SCREW	2	
8	RKA0076-N	FOOT	4	
9	XTBS3+10JFZ1	SCREW	1	
10	XTB3+6G	SCREW	4	
11	RFKGRSHD81-S	FRONT PANEL ASS'Y	1	
12	RFKRSHD7-N	CASSETTE DOOR ASS'Y	1	
13	RGL0331-Q	PANEL LIGHT(A)	3	
14	RGL0332-Q	PANEL LIGHT(B)	1	
15	RGU1391-S	BUTTON	1	
16	RMB0478	CASSETTE DOOR SPRING	1	
17	XTBS26+8J	SCREW	7	
18	SHE170-2	P.C.B. SUPPORT	2	
19	XTB3+12JFZ	SCREW	4	
20	XTW2+6S	SCREW	2	
21	RJR0113	CONNECTOR(4P)(CP305)	1	
206	RFKRSTR979	HEAD BLOCK ASS'Y	1	
206-1	RHD17015	AZIMUTH SCREW	2	
206-2	RMB0352-1	SPRING	1	
206-3	RMQ0360A	CONNECTOR HOLDER	1	
207	RDV108ZA	BELT	1	
208	RDK0019A-1J	MAIN GEAR	1	
220	RXG0036	REEL TABLE GEAR	2	
221	RXL0106	IDLER LEVER	1	
222	RXP0052	PINCH ROLLER(F) ASS'Y	1	
222-1	RMB0259	SPRING	1	
223	RXP0053	PINCH ROLLER(R) ASS'Y	1	
223-1	RMB0260	SPRING	1	
224	RDG0206-1	GEAR	1	
225	RDG0209A	GEAR	1	
226	REM0036-1	CAPSTAN MOTOR ASS'Y	1	
227	REM0043	REEL MOTOR ASS'Y	1	
228	RHD26013	SCREW	4	
229	RMQ0537	DRIVE GEAR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
231	RXG0037	GEAR ASS'Y	1	
232	RMQ0536	DRIVE RACK	1	
233	RYF0334B-K3	CASSETTE HOLDER	1	
233-1	RMC0310	SPRING	2	
233-2	RMB0397	SPRING	1	
239	XTW2+6S	SCREW	2	
240	RXR0018	REEL TABLE	2	
241	XTW2+5L	SCREW	2	
C101,02	ECUV1H221KBN	50V 220P	2	
C105,06	ECEA1EKA4R7B	25V 4.7U	2	
C107,08	ECEA0JKA470B	6.3V 47UF	2	
C109,10	ECUV1H561KBN	50V 560P	2	
C111,12	ECUV1E183KBN	25V 0.018U	2	
C113,14	ECUV1H331KBN	50V 330P	2	
C115,16	ECEA1EKA4R7B	25V 4.7U	2	
C119,20	ECEA1EKA4R7B	25V 4.7U	2	
C121	ECEA1HKAR33B	50V 0.33UF	1	
C122	ECUV1E223KBN	25V 0.022U	1	
C123	ECUV1E153KBN	25V 0.015U	1	
C124	ECUV1H102KBN	50V 1000P	1	
C125	ECEA1AKA220B	10V 22U	1	
C126	RCE1AKA101BG	10V 100U	1	
C127	RCE1CKA100BG	16V 10U	1	
C128	ECEA0JKA470B	6.3V 47UF	1	
C130-32	ECUV1H331KBN	50V 330P	3	
C133	ECEA1HKA010B	50V 1U	1	
C134	RCE1HKA3R3BG	50V 3.3U	1	
C141	ECUV1H471KBN	50V 470P	1	
C144	ECUV1H471KBN	50V 470P	1	
C145,46	ECUV1H332KBN	50V 3300P	2	
C150	ECUV1E104ZFN	25V 0.1U	1	
C203,04	ECEA1EKA4R7B	25V 4.7U	2	
C205,06	ECEA1HKA010B	50V 1U	2	
C207,08	ECUV1H820JCN	50V 82P	2	
C211,12	ECUV1H152KBN	50V 1500P	2	
C213,14	ECEA1EKA4R7B	25V 4.7U	2	
C215,16	RCE1CKA100BG	16V 10U	2	
C217,18	ECEA1HKAR68B	50V 0.68U	2	
C219	ECEA1CKA101B	16V 100U	1	
C220	ECA1AM471B	16V 470U	1	
C221,22	ECEA1HKAR68B	50V 0.68U	2	
C223	RCE1CKA100BG	16V 10U	1	
C239,40	ECUV1H681KBN	50V 680P	2	
C303	ECQP2E472JZT	250V 4700P	1	
C304	RCE1AKA101BG	10V 100U	1	
C305	ECEA1HKA0R1B	50V 0.1U	1	
C306	ECQB1H393JF3	50V 0.039U	1	
C307	ECUV1H102KBN	50V 1000P	1	
C308	ECUV1H332KBN	50V 3300P	1	
C309	ECEA0JKA470B	6.3V 47UF	1	
C310,11	ECUV1E333KBN	25V 0.033U	2	
C312	ECEA1HKN2R2B	50V 2.2U	1	
C323	ECUV1H102KBN	50V 1000P	1	
C601,02	ECUV1E104ZFN	25V 0.1U	2	
⚠ C603	ECA1EM222E	25V 2200U	1	
⚠ C604	ECA1EM102B	25V 1000U	1	
C606	ECUV1E104ZFN	25V 0.1U	1	
C607	ECA1AM471B	10V 470UF	1	
C608	RCE1AKA101BG	10V 100U	1	
C609	ECUV1H103KBN	50V 0.01U	1	
C611	ECEA1HKA010B	50V 1U	1	
C613	RCE1AKA470BG	10V 47U	1	
C614,15	ECUV1H103KBN	50V 0.01U	2	
C616,17	ECUV1H102KBN	50V 1000P	2	
C618	RCE1CKA100BG	16V 10U	1	
C619	ECUV1H102KBN	50V 1000P	1	
C701	ECUV1E104ZFN	25V 0.1U	1	
C702	ECEA0JKA101B	6.3V 100U	1	
C705	ECUV1H103KBN	50V 0.01U	1	
C706	ECST0JY335RR	6.3V 3.3U	1	
C707,08	ECUV1H103KBN	50V 0.01U	2	
C712-15	ECUV1H101KCN	50V 100P	4	
C810	ECUV1E104ZFN	25V 0.1U	1	
C811	ECEA1EKA470B	25V 47U	1	

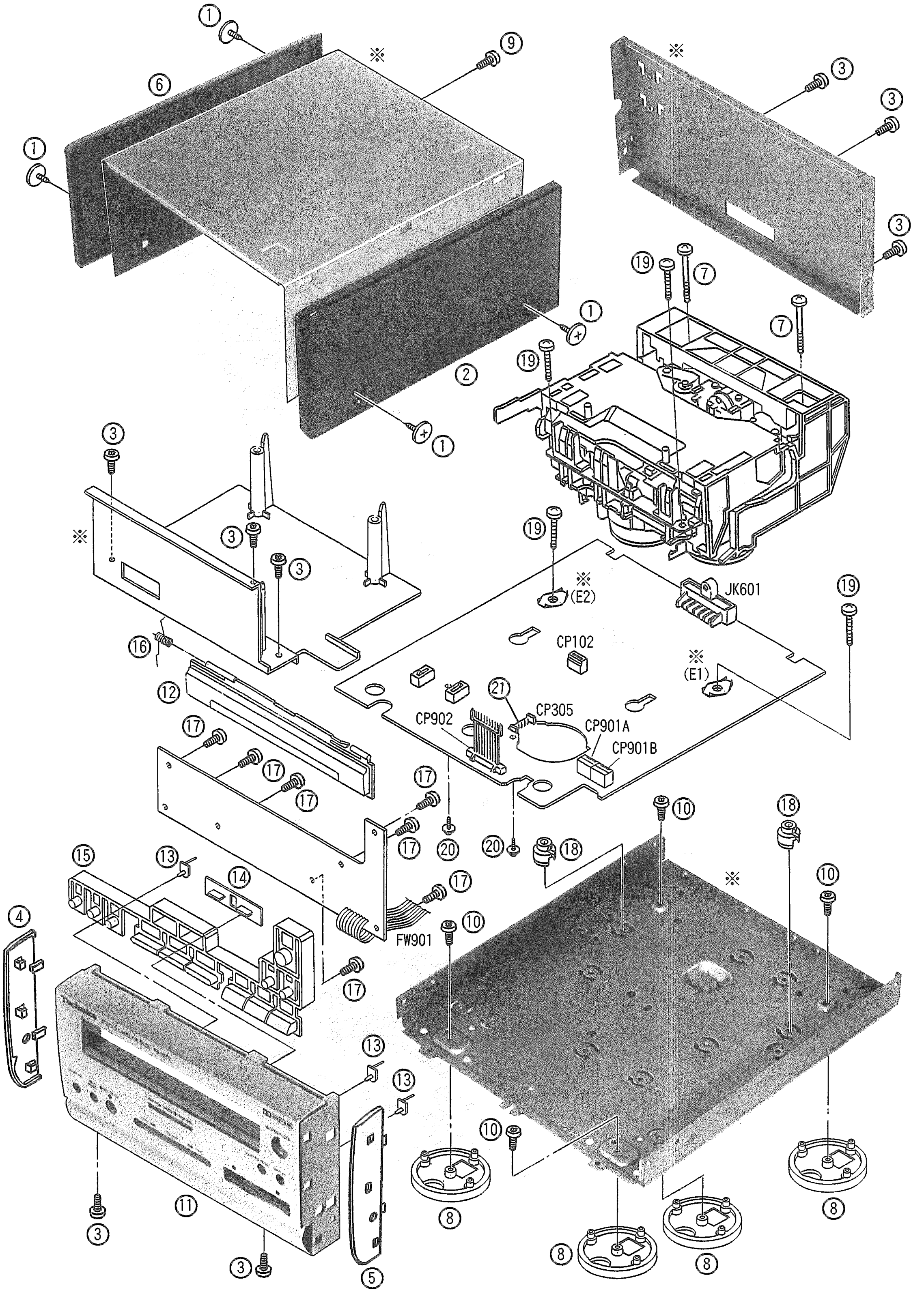
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C812	ECUV1H101KCN	50V 100P	1	
C813	RCE1AKA101BG	10V 100U	1	
C814,15	ECUV1H101KCN	50V 100P	2	
C816	ECUV1E104ZFN	25V 0.1U	1	
C819	ECST1AX106RR	10V 10U	1	
C901	ECUV1H101KCN	50V 100P	1	
C902	ECUV1E104ZFN	25V 0.1U	1	
C903	ECUV1H101KCN	50V 100P	1	
C912-17	ECUV1H101KCN	50V 100P	6	
CP102	RJS2A0205-2S	CONNECTOR(5P)	1	
CP901A	RJS1A1704	CONNECTOR(4P)	1	
CP901B	RJS1A1704	CONNECTOR(4P)	1	
CP902	RJT071H11A	CONNECTOR(11P)	1	
CS971	RJU071H11M	CONNECTOR(11P)	1	
D201	MA110TX	DIODE	1	
D301	MA110TX	DIODE	1	
⚠ D603-06	RL1N4003N02	DIODE	4	
D609	MA723TA	DIODE	1	
⚠ D610	MTZJ10BTA	DIODE	1	
⚠ D611	MTZJ8R2CTA	DIODE	1	
⚠ D612	MTZJ5R6BTA	DIODE	1	
D613	MA723TA	DIODE	1	
⚠ D614,15	MA110TX	DIODE	2	
D705,06	MA110TX	DIODE	2	
⚠ D707	MTZJ5R1BTA	DIODE	1	
D708,09	MA110TX	DIODE	2	
D802	MA188TA	DIODE	1	
D901	SLR-305VC	L.E.D.	1	
D904	MA110TX	DIODE	1	
D905	SPR-305MDTF	L.E.D.	1	
D906	MA110TX	DIODE	1	
D907	SPR-305MDTF	L.E.D.	1	
D908,09	SLR-305VC	L.E.D.	2	
D910,11	MA110TX	DIODE	2	
D971	RVD1SS133TA	DIODE	1	
FW901	REZ0885	FLAT CABLE(8P)	1	
IC101	A1898QT6BC	IC	1	
IC103	BA7755AF	IC	1	
IC201	CXA1102M-T4	IC	1	
IC701	M37471M4685F	IC	1	
IC802	BA6265AFP-E1	IC	1	
IC901	BU2040F-T2	IC	1	
IC971,72	RVSGP2S24BC	IC	2	
JK601	RJT065K15	SYSTEM CONNECTOR(15P)	1	
L201,02	SLQX303-1KT	COIL	2	
L301	RL08C006M-T	COIL	1	
L302	RLQZB470KT-D	COIL	1	
L701	RLQA100JT-Y	COIL	1	
L702	RLQZP1R0KT-Y	COIL	1	
L901	RLQA100JT-Y	COIL	1	
Q101-06	2SJ163PQRTX	TRANSISTOR	6	
Q107	DTA114EUT106	TRANSISTOR	1	
Q111	2SD601ATX	TRANSISTOR	1	
Q112	DTA114EUT106	TRANSISTOR	1	
Q113,14	2SD1328TX	TRANSISTOR	2	
Q201,02	2SJ106GBT85L	TRANSISTOR	2	
Q301	2SD601ARTX	TRANSISTOR	1	
Q302	2SD1328TX	TRANSISTOR	1	
Q303,04	2SD874QRSTX	TRANSISTOR	2	
Q305,06	DTC144EUT106	TRANSISTOR	2	
⚠ Q602,03	2SD2137PQTA	TRANSISTOR	2	
⚠ Q605	2SD2137PQTA	TRANSISTOR	1	
Q606	2SD601ATX	TRANSISTOR	1	
⚠ Q609	2SD2137PQTA	TRANSISTOR	1	
Q701-03	2SD601ATX	TRANSISTOR	3	
Q706	UN5214TX	TRANSISTOR	1	
Q804	2SD1328TX	TRANSISTOR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
Q901,02	DTA114EUT106	TRANSISTOR	2	
Q903,04	2SB709ATX	TRANSISTOR	2	
R101,02	ERJ6GEYJ682V	1/10W 6.8K	2	
R103,04	ERJ6GEYJ104V	1/10W 100K	2	
R105,06	ERJ6GEYJ102Z	1/10W 1K	2	
R107,08	ERJ6GEYJ820V	1/10W 82	2	
R110	ERJ6GEYJ334V	1/10W 330K	1	
R111,12	ERJ6GEYJ101Z	1/10W 100	2	
R113,14	ERJ6GEYJ103V	1/10W 10K	2	
R117	ERJ6GEYJ123V	1/10W 12K	1	
R118	ERJ6GEYJ102Z	1/10W 1K	1	
R119,20	ERJ6GEYJ330V	1/10W 33	2	
R121,22	ERJ6GEYJ225V	1/10W 2.2M	2	
R123-26	ERJ6GEYJ104V	1/10W 100K	4	
R127,28	ERJ6GEYJ222V	1/10W 2.2K	2	
R129	ERJ6GEYJ333V	1/10W 33K	1	
R130	ERJ6GEYJ273V	1/10W 27K	1	
R131	ERJ6GEYJ562V	1/10W 5.6K	1	
R132	ERJ6GEYJ104V	1/10W 100K	1	
R133	ERJ6GEYJ103V	1/10W 10K	1	
R135	ERJ6GEYJ334V	1/10W 330K	1	
R137	ERJ6GEYJ334V	1/10W 330K	1	
R141,42	ERJ6GEYJ103V	1/10W 10K	2	
R145	ERJ6GEYJ183V	1/10W 18K	1	
R148,49	ERJ6GEYJ562V	1/10W 5.6K	2	
R153,54	ERJ6GEYJ102Z	1/10W 1K	2	
R157,58	ERJ6GEYJ223V	1/10W 22K	2	
R159	ERJ6GEYJ104V	1/10W 100K	1	
R160	ERJ6GEYJ103V	1/10W 10K	1	
R165,66	ERJ6GEYJ104V	1/10W 100K	2	
R167-69	ERJ6GEYJ222V	1/10W 2.2K	3	
R170	ERJ6GEYJ472V	1/10W 4.7K	1	
R171	ERJ6GEYJ682V	1/10W 6.8K	1	
R172,73	ERJ6GEYJ122V	1/10W 1.2K	2	
R174	ERJ6GEYJ103V	1/10W 10K	1	
R176	ERJ6GEYJ392V	1/10W 3.9K	1	
R177	ERJ6GEYJ273V	1/10W 27K	1	
R178,79	ERJ6GEYJ334V	1/10W 330K	2	
R207,08	ERJ6GEYJ104V	1/10W 100K	2	
R209,10	ERJ6GEYJ102Z	1/10W 1K	2	
R213,14	ERJ6GEYJ392V	1/10W 3.9K	2	
R215,16	ERJ6GEYJ153V	1/10W 15K	2	
R217,18	ERJ6GEYJ222V	1/10W 2.2K	2	
R219	ERJ6GEYJ433V	1/10W 43K	1	
R220	ERJ6GEYJ220V	1/10W 22	1	
R221,22	ERJ6GEYJ221V	1/10W 220	2	
R223	ERJ6GEYJ220V	1/10W 22	1	
R230	ERJ6GEYJ103V	1/10W 10K	1	
R231	ERJ6GEYJ334V	1/10W 330K	1	
R241,42	ERJ6GEYJ822V	1/10W 8.2K	2	
R301	ERJ6GEYJ103V	1/10W 10K	1	
R302	ERJ6GEYJ182V	1/10W 1.8K	1	
R303	ERJ6GEYJ682V	1/10W 6.8K	1	
R304	ERJ6GEYJ223V	1/10W 22K	1	
R305	ERJ6GEYJ103V	1/10W 10K	1	
R306	ERJ6GEYJ223V	1/10W 22K	1	
⚠ R307	ERDS1FJ2R2	1/2W 2.2	1	
R308	ERJ6GEYJ102Z	1/10W 1K	1	
R309-11	ERJ6GEYJ472V	1/10W 4.7K	3	
R313	ERJ6GEYJ1R0V	1/10W 1	1	
R601,02	ERJ6GEYJ472V	1/10W 4.7K	2	
R603	ERJ6GEYJ820V	1/10W 82	1	
⚠ R605	ERD2FCJ4R7	1/4W 4.7	1	
⚠ R607	ERD2FCG100	1/4W 10	1	
R608	ERJ6GEYJ100V	1/10W 10	1	
R610	ERJ6GEYJ471V	1/10W 470	1	
R612,13	ERJ6GEYJ1R0V	1/10W 1	2	
R614	ERJ6GEYJ102Z	1/10W 1K	1	
R615	ERJ6GEYJ332V	1/10W 3.3K	1	
R616	ERJ6GEYJ103V	1/10W 10K	1	
R627,28	ERJ6GEYJ1R0V	1/10W 1	2	
R630	ERDS2TJ1R0T	1/4W 1	1	
R631	ERJ6GEYJ181V	1/10W 180	1	
R632,33	ERJ6GEYJ471V	1/10W 470	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R634,35	ERJ6GEYJ820V	1/10W 82	2	
R636,37	ERJ6GEYJ181V	1/10W 180	2	
R638	ERJ6GEYJ102Z	1/10W 1K	1	
R701,02	ERJ6GEYJ103V	1/10W 10K	2	
R704	ERJ6GEYJ472V	1/10W 4.7K	1	
R705	ERJ6GEYJ473V	1/10W 47K	1	
R708	ERJ6GEYJ472V	1/10W 4.7K	1	
R709	ERJ6GEYJ101Z	1/10W 100	1	
R710	ERJ6GEYJ102Z	1/10W 1K	1	
R711	ERJ6GEYJ104V	1/10W 100K	1	
R712	ERJ6GEYJ683V	1/10W 68K	1	
R715	ERJ6GEYJ472V	1/10W 4.7K	1	
R718	ERJ6GEYJ683V	1/10W 68K	1	
R721	ERJ6GEYJ103V	1/10W 10K	1	
R722,23	ERJ6GEYJ102Z	1/10W 1K	2	
R727	ERJ6GEYJ472V	1/10W 4.7K	1	
R728	ERJ6GEYJ103V	1/10W 10K	1	
R729	ERJ6GEYJ472V	1/10W 4.7K	1	
R736	ERJ6GEYJ103V	1/10W 10K	1	
R738	ERJ6GEYJ102Z	1/10W 1K	1	
R739	ERJ6GEYJ272V	1/10W 2.7K	1	
R740	ERJ6GEYJ473V	1/10W 47K	1	
R741	ERJ6GEYJ223V	1/10W 22K	1	
R742	ERJ6GEYJ103V	1/10W 10K	1	
R743	ERJ6GEYJ473V	1/10W 47K	1	
R744	ERJ6GEYJ102Z	1/10W 1K	1	
R745,46	ERJ6GEYJ103V	1/10W 10K	2	
R748	ERJ6GEYJ103V	1/10W 10K	1	
R750	ERJ6GEYJ103V	1/10W 10K	1	
R751	ERJ6GEYJ104V	1/10W 100K	1	
R806,07	ERJ6GEYJ103V	1/10W 10K	2	
R808	ERJ6GEYJ392V	1/10W 3.9K	1	
R810	ERJ6GEYJ103V	1/10W 10K	1	
R811-13	ERJ6GEYJ272V	1/10W 2.7K	3	
R820	ERDS2FJ2R2	1/4W 2.2	1	
R900	ERJ6GEYJ821V	1/10W 820	1	
R901	ERJ6GEYJ102Z	1/10W 1K	1	
R902	ERJ6GEYJ122V	1/10W 1.2K	1	
R903	ERJ6GEYJ152V	1/10W 1.5K	1	
R904	ERJ6GEYJ182V	1/10W 1.8K	1	
R905	ERJ6GEYJ222V	1/10W 2.2K	1	
R906	ERJ6GEYJ332V	1/10W 3.3K	1	
R907	ERJ6GEYJ472V	1/10W 4.7K	1	
R908	ERJ6GEYJ682V	1/10W 6.8K	1	
R909	ERJ6GEYJ123V	1/10W 12K	1	
R910	ERJ6GEYJ223V	1/10W 22K	1	
R911	ERJ6GEYJ683V	1/10W 68K	1	
R912	ERJ6GEYJ102Z	1/10W 1K	1	
R914	ERJ6GEYJ151V	1/10W 150	1	
R915	ERJ6GEYJ121V	1/10W 120	1	
R916	ERJ6GEYJ151V	1/10W 150	1	
R917	ERJ6GEYJ121V	1/10W 120	1	
R918	ERJ6GEYJ102Z	1/10W 1K	1	
R921,22	ERJ6GEYJ101Z	1/10W 100	2	
R924	ERJ6GEYJ821V	1/10W 820	1	
R925	ERJ6GEYJ102Z	1/10W 1K	1	
R926,27	ERJ6GEYJ473V	1/10W 47K	2	
R928	ERJ6GEYJ151V	1/10W 150	1	
R929	ERJ6GEYJ121V	1/10W 120	1	
R930	ERJ6GEYJ103V	1/10W 10K	1	
R931	ERJ6GEYJ151V	1/10W 150	1	
R932	ERJ6GEYJ121V	1/10W 120	1	
R933	ERJ6GEYJ103V	1/10W 10K	1	
R971	ERDS2TJ221T	1/4W 220	1	
R973,74	ERDS2FJ393	1/4W 39K	2	
RJ1-38	ERJ6GEY0R00Z	CHIP JUMPER	38	
S803,04	RSH1A024-U	SW	2	
S900-06	EVQPTD05Q	SW	7	
S909-12	EVQPTD05Q	SW	4	
S915	EVQPTD05Q	SW	1	
S971	RSH1A018-1U	SW	1	
S972-76	RSH1A019-2U	SW	5	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
SA1	QZZCFM	TEST TAPE	1	
SA2	QZZCWAT	TEST TAPE	1	
SA3	SZZ0L18	FLOIL AK-152	1	
SA4	RZZ0L02	SWAFLUID #56	1	
SA5	RZZ0L05	MOLYCOAT EM-20L	1	
VR102,03	EVNDXAA00B24	V.R	2	
VR803	EVNDXAA00B53	V.R	1	
X701	EF0EC8004T4	OSCILLATOR	1	
Z971	EXBF6L306SYV	COMBINATION PARTS	1	

Cabinet Parts Location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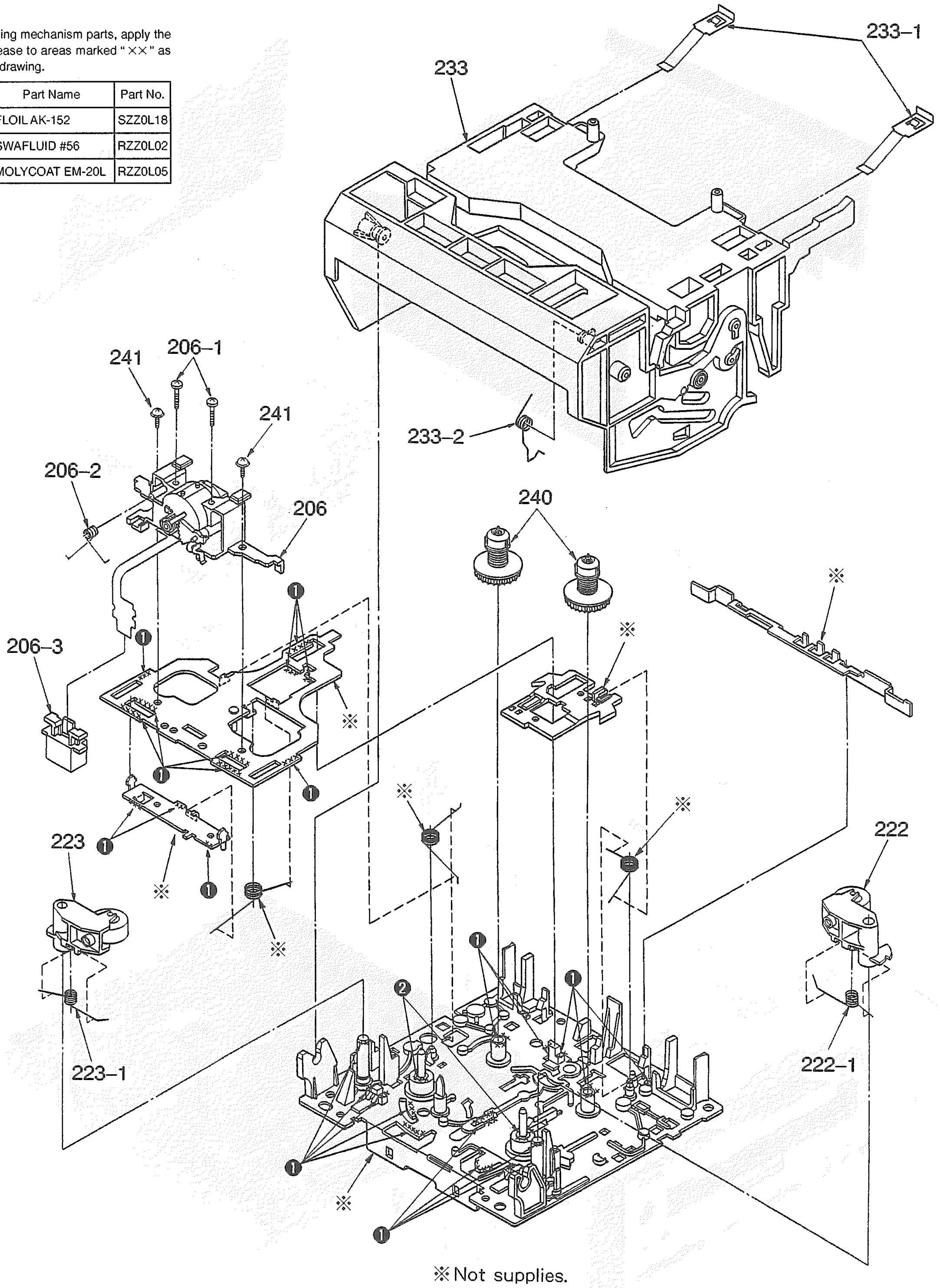
※ Not supplies.

Loading Mechanism Parts Location

Note:

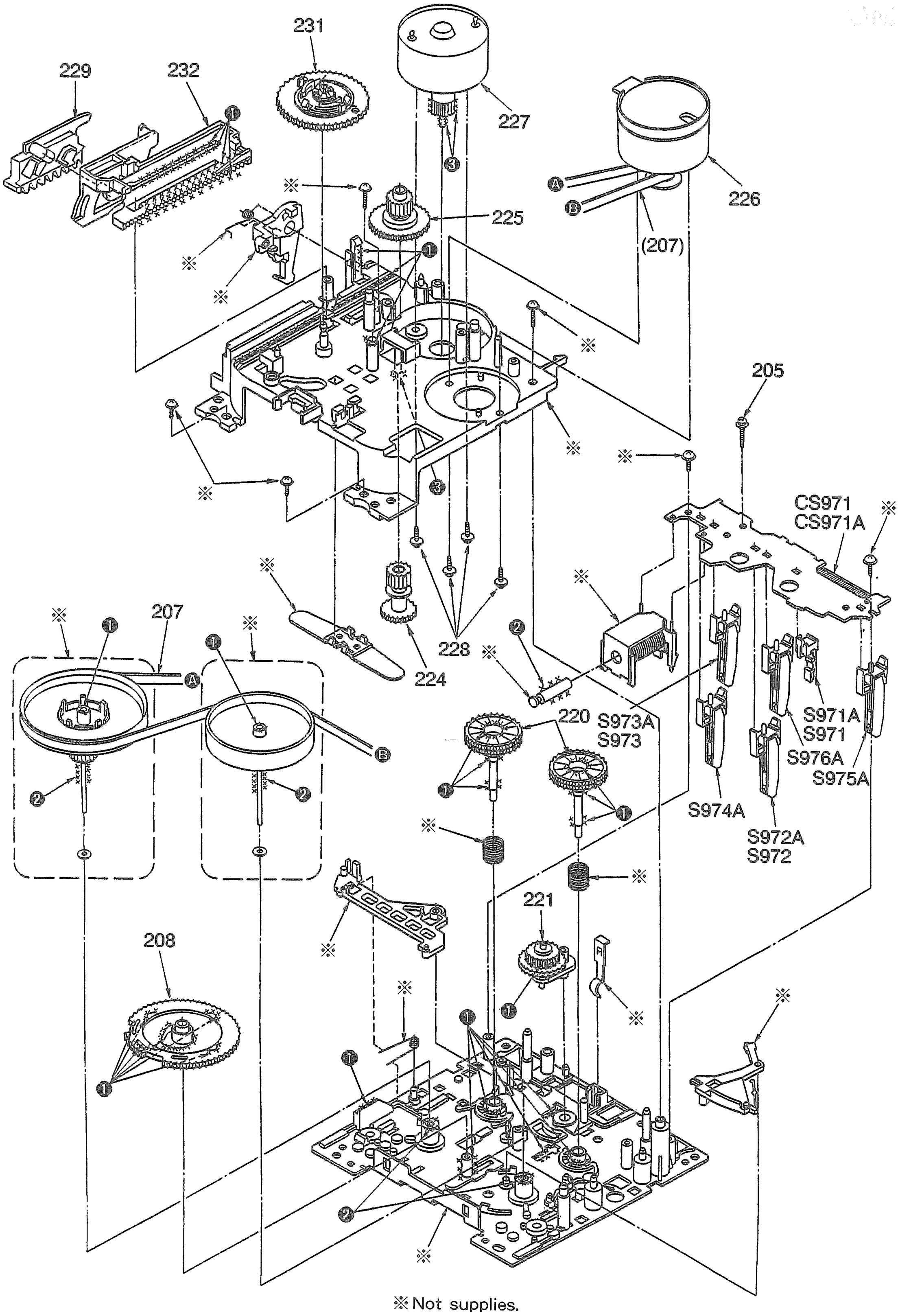
When changing mechanism parts, apply the specified grease to areas marked " ×× " as shownin the drawing.

Ref. No.	Part Name	Part No.
❶	FLOIL AK-152	SZZ0L18
❷	SWAFLUID #56	RZZ0L02
❸	MOLYCOAT EM-20L	RZZ0L05



233-1
233
241
206-1
241
233-2
206-2
206
240
206-3
❶
※
223
222
222-1
223-1
❷

※Not supplies.


231
229
232
227
226
225
(207)
205
CS971
CS971A
228
224
207
220
S973A
S973
S971A
S971
S976A
S975A
S974A
S972A
S972
221
208
A
B
※

※ Not supplies.

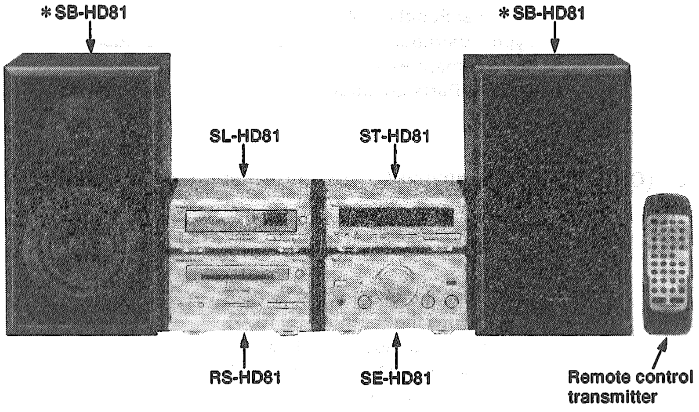
ORDER NO. AD9802026C2

Service Manual

Tuner

Tuner

ST-HD81



Colour

(N) ....Gold Type

Area

E ....Europe.

System: SC-HD81

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

Specifications

Pre-amplifier section
Input sensitivity/impedance
EXTERNAL: 250 mV/15 kΩ
Output level
EXTERNAL: 250 mV/1.5 kΩ
Frequency response
EXTERNAL: 50 Hz—25 kHz
S/N
EXTERNAL: DIN 82 dB (83 dB, IHF)

FM tuner section
Frequency range: 87.50—108.00 MHz (0.05 MHz steps)
Sensitivity: 1.8 µV (IHF usable)
S/N 26 dB: 1.5 µV
S/N
MONO: 70 dB (75 dB, IHF)
Stereo separation
1kHz: 35 dB
Antenna terminal(s): 75 Ω (unbalance)

AM tuner section
Frequency range: 522—1611 kHz (9 kHz steps) 530—1620 kHz (10 kHz steps)
Sensitivity (S/N 20 dB): 500 µV/m

Timer section
Clock: Quartz-lock type
Function: 24-hour programmable; Play timer (1 time), Rec timer (1 time) Sleep (120 min., 30 min. intervals)
Setting: 1 minute—23 hours 59 minutes (1 min. intervals)

General
Dimensions (W×H×D): 196(Wide)/ 67(High)/ 235(Depth) mm
Weight: 1.2 kg

Note:
1. Specifications are subject to change without notice.
2. Weight and dimensions are approximate.

System/SC-HD81:
Tuner: ST-HD81, Compact Disc Changer: SL-HD81, Amplifier: SE-HD81, Cassette Deck: RS-HD81, Speakers: *SB-HD81

Notes: * ...... Made in PAES

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics®

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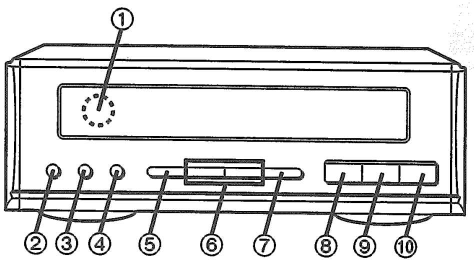
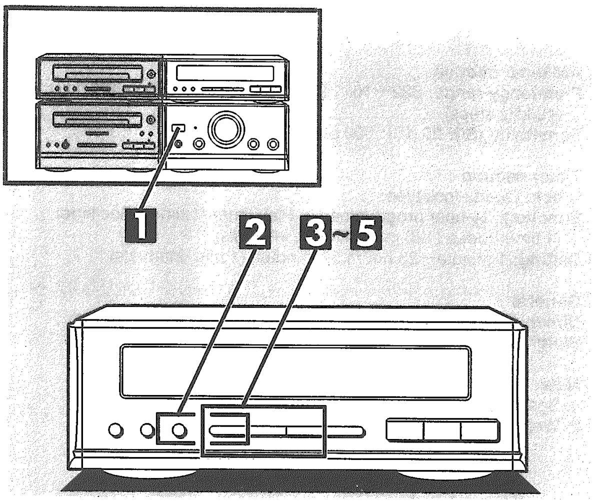
NOTE:
Refer to the service manual for Model No. SE-HD81 (ORDER No. AD9802028C2) for information on"Accessories", "Installation", "Connections" and "Packaging".

Location of Controls



① **Remote control signal sensor**
② **Record timer button (⊕ REC)**
③ **Play timer button (⊕ PLAY)**
④ **Clock/timer button (CLOCK/TIMER)**
⑤ **Set button (SET)**
⑥ **Tuning/time adjust buttons (∨, ∧ TUNING/TIME ADJUST)**
⑦ **Tuning mode select button (TUNING MODE)**
⑧ **Source input select button (INPUT SELECTOR)**
⑨ **RDS display mode select button (RDS DISPLAY MODE)**
⑩ **Band select button (FM/AM)**

Setting the Time



The tuner displays the time, frequency and other information on CDs and tapes.

This is a 24-hours display clock.

These instructions explain how to set the timer for 16:25 on Wednesday.

1 **Switch on the power.**

2 **① Press CLOCK/TIMER to show "CLOCK".**
Every time you press the button, the indication changes in the order of CLOCK→⊕ REC→⊕ PLAY→Original display.
Within 8 seconds:
② Press SET.

3 **① Press ∨ or ∧ to select the day.**
Every time you press one of the buttons, the indication changes in the order of SUN⇄MON⇄TUE⇄WED⇄THU⇄FRI⇄SAT.
② Press SET.

4 **① Press ∨ or ∧ to select the hour.**
② Press SET.

5 **① Press ∨ or ∧ to select the minutes.**
② Press SET to finish setting the time.

The display will return to the previous display after about 3 seconds.

When "--:--" appears:

It flashes when you connect the AC power supply cord for the first time or if there has been a power failure.
Reset the time as explained above.

If the minutes setting is off:

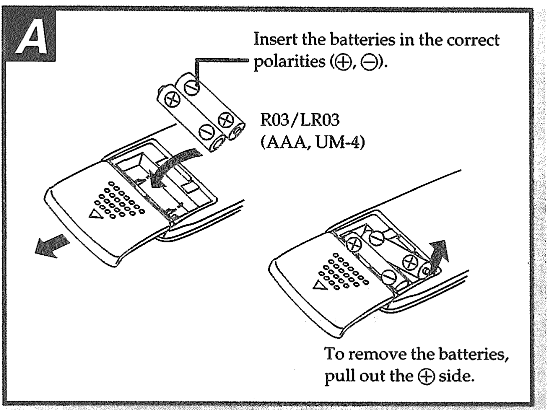
1. Press CLOCK/TIMER.
2. Press SET 3 times.
3. Press ∨ or ∧ to set the minute, and then press SET.

To display the clock again:

Press CLOCK/TIMER.
The clock display will appear for about 8 seconds.

For your reference:

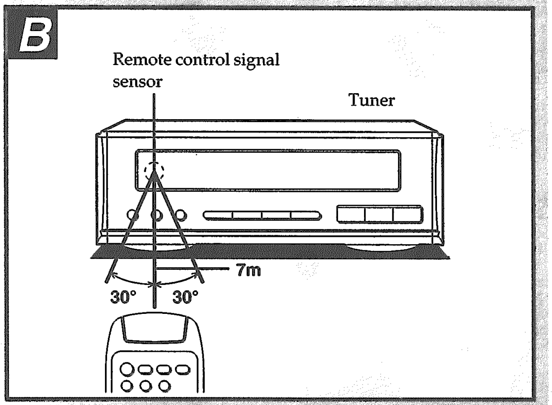
When you turn OFF the system from the POWER button, the system goes on standby and the STANDBY indicator lights up.

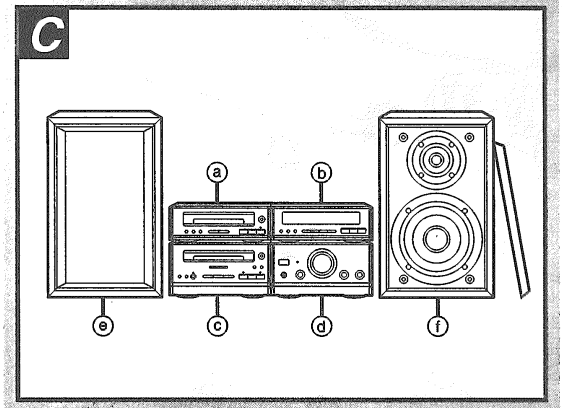


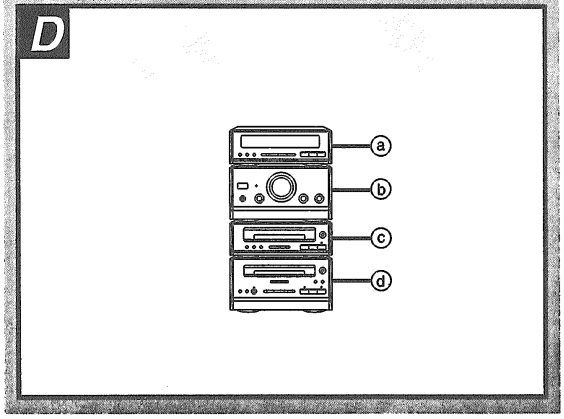
Insert the batteries in the correct polarities (⊕, ⊖).

R03/LR03
(AAA, UM-4)

To remove the batteries, pull out the ⊕ side.







Preparing for the Remote Control

Battery installation A

- Do not mix old and new batteries, or batteries of different types (manganese and alkaline, etc.).
- Never subject batteries to excessive heat or flame; do not attempt to disassemble them; and be sure they are not short-circuited.
- If the remote control is not to be used for a long period of time, remove the batteries and store them in a cool, dark place.
- Do not attempt to recharge alkaline or manganese batteries.
- Do not use rechargeable type batteries.

The battery life is about one year.

The batteries should be replaced if commands from the remote control transmitter do not operate the unit even when the transmitter is held close to the front panel.

Correct method of use B

- Aim the remote control's transmission window toward the unit's sensor. Avoid any obstacles.
- The maximum distance is within 7 meters directly facing toward the remote control signal sensor.
- Be sure the transmission window and the unit's sensor are free from dust. Excessive dust might affect its performance.
- The operation may not be correct if direct sunlight or other strong light source strikes the receiving sensor of this unit. If there is a problem, place the unit away from the light source.
- If this system is installed in a rack with glass doors, the glass doors' thickness or color might make it necessary to use the remote control a shorter distance from the system.
- Never place heavy items.
- Do not disassemble or reconstruct.
- Do not spill water or other liquids.

Installation

Locating the components

Side-by-side set-up C

ⓐCD changer
ⓑTuner
ⓒCassette deck
ⓓAmplifier
ⓔLeft speaker
ⓕRight speaker

Stacking D

ⓐTuner
ⓑAmplifier
ⓒCD changer
ⓓCassette deck

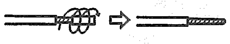
Caution
Use the speakers only with the recommended system. Failure to do so may lead to damage to the amplifier and/or the speaker, and may result in the risk of fire. Consult a qualified service person if damage has occurred or if you experience a sudden change in performance.

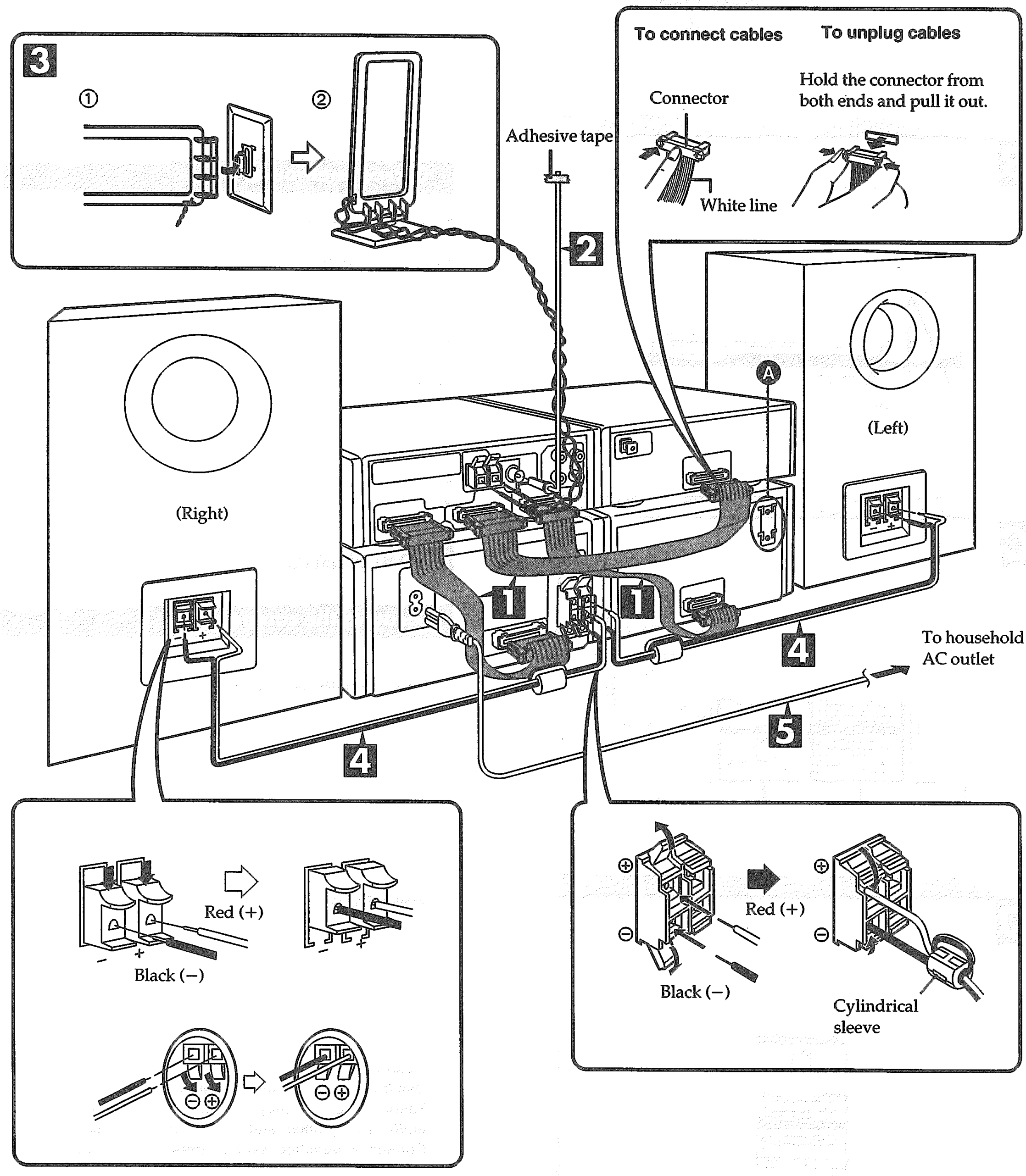
Note
Left and right speakers are exactly the same.

Connections

Connect the AC mains lead after you have connected all other cables.

To prepare the AM loop antenna wire and speaker cords, twist the vinyl cover tip and pull off.




3
①
②
Adhesive tape
2
To connect cables
To unplug cables
Connector
White line
(Right)
(Left)
A
1
1
4
4
5
To household AC outlet
Red (+)
Black (–)
−
+
⊖
⊕
Red (+)
Black (–)
⊕
⊖
Cylindrical sleeve

Hold the connector from both ends and pull it out.

1 Connect the flat cables.

1. Connect the short flat cable to the terminal of the A1 and A2.
2. Connect the long thick flat cable to the terminal of the B1 and B2.
3. Connect the long thin flat cable to the terminal of the C1 and C2.

Note

Do not try connecting or disconnecting the flat cables while the power is switched to ON.

After connection:

Keep cables as flat against the back of the unit as possible.

2 Connect the FM indoor antenna.

Tape the antenna to a wall or column, in a position where radio signals are received with the least amount of interference.

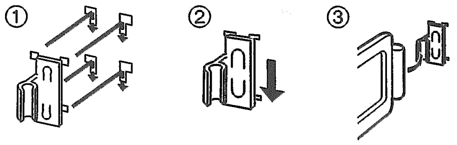
Note

When you cannot get a good reception with this FM indoor antenna, we recommend you install an FM outdoor antenna (not included).

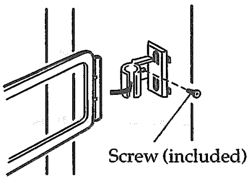
3 Connect the AM loop antenna.

You can also install the AM loop antenna on the rear of the cassette deck, wall or pillars.
In this case, be sure to use the antenna holder with the hole.

- **To install on the cassette deck rear (Ⓐ)**



- **To install on walls or pillars**



Note

To minimize noise pickup, bundle the loop antenna cord using a tape or so to keep the flat cables away from the AM loop antenna cord.

4 Connect the right (R) and left (L) front speaker cables.

Note

- For SC-HD81 connect the end of the speaker cable with the cylindrical sleeve to the amp side.
- To prevent damage to circuitry, never short-circuit positive (+) and negative (−) speaker wires.
- Be sure to connect only positive (red) wires to positive (+) terminals and negative (black) wires to negative (−) terminals.

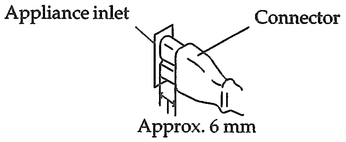
These speakers are made so as to be able to be used in close proximity to the TV, but irregular coloring may result due to how the system is placed. If such distortion occurs, turn off the TV for sometime between 15 and 30 minutes. The demagnetizing function of the TV will eliminate the distortion. If the irregular coloring is still visible, then move the speaker further away from the TV. Please note that if there is a magnetic object near the TV, irregular coloring may result due to the interaction between the TV and the speakers.

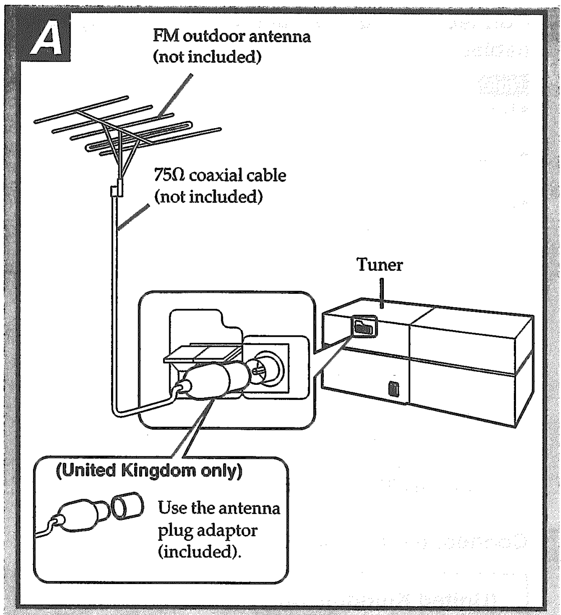
5 Connect the AC mains lead.

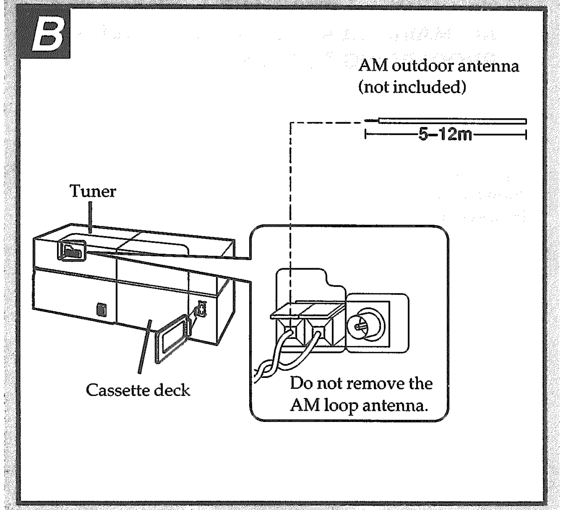
(United Kingdom only)
BE SURE TO READ THE CAUTION FOR AC MAINS LEAD ON PAGE 4 BEFORE PROCEEDING TO STEP 5.

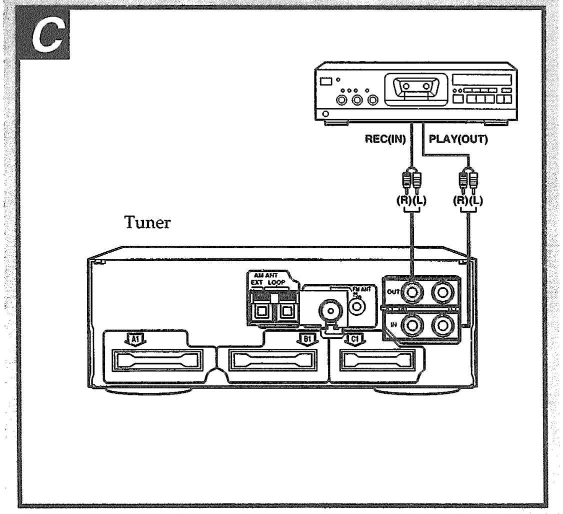
Insertion of Connector

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.
However there is no problem using the unit.




A
FM outdoor antenna (not included)
75Ω coaxial cable (not included)
Tuner
(United Kingdom only)
Use the antenna plug adaptor (included).


B
AM outdoor antenna (not included)
5–12m
Tuner
Cassette deck
Do not remove the AM loop antenna.


C
REC(IN)
PLAY(OUT)
(R)(L)
(R)(L)
Tuner
AM ANT EXT LOOP
FM ANT
OUT
IN
A1
B1
C1

Optional antenna connections

You may need an outdoor antenna if you use this system in a mountainous region or inside a reinforced-concrete building, etc.

FM outdoor antenna (not included) A

Note

An outdoor antenna should be installed by a competent technician only.

AM outdoor antenna (not included) B

Connect the outdoor antenna without removing the AM loop antenna. Run 5 to 12 m of vinyl-covered wire horizontally along a window or other convenient location.

Note

When the unit is not in use, disconnect the outdoor antenna to prevent possible damage that may be caused by lightning. Never use an outdoor antenna during an electrical storm.

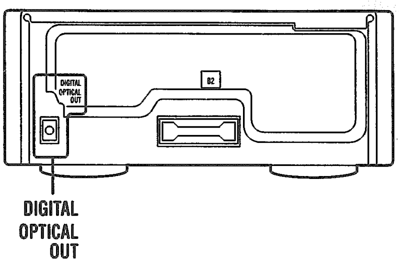
External unit connections

Connecting a cassette deck C

- Make sure that the power supply for all components has been turned off before making any connections.
- For details, refer to the operating instructions of the cassette deck which is to be connected.
- All peripheral components and cables sold separately.

Stereo connection cable
White (L) (L)
Red (R) (R)

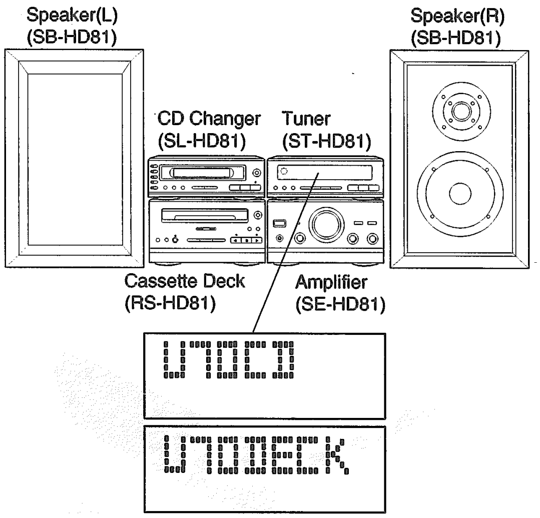
Connections to "DIGITAL OPTICAL OUT" terminal


DIGITAL OPTICAL OUT
B2
DIGITAL
OPTICAL
OUT

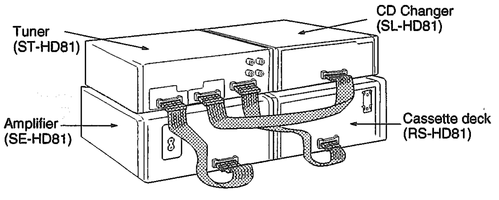
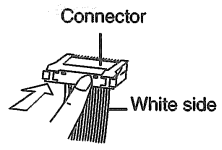
Before using this terminal, take out the dust protection cap.
Connect an optical-fiber cable to the optical input terminal of the DCC or minidisc deck (cables and components not included).

About the Self-Diagnostic Mode

This unit is equipped with a self-diagnostic function which, in the event of a malfunction, automatically displays a code indicating the nature of the malfunctions. Use this self-diagnostic function when servicing the unit.

Display method	Display location
To display the malfunction code U70 CD: U70 DECK:.... Automatically displays on the tuner when a malfunction occurs. F61 .... Automatically displays on the tuner when a malfunction occurs. **To return to the normal display** **1. For U70 CD/U70 DECK:** ● Press an any operation button on the tuner. ● To re-display the code, switch the power off (POWER STANDBY button), and then switch power back on again. **2. For F61:** ● If "F61" is displayed, the power will automatically be switched off and the standby indicator will light up. ● "F61" will be displayed for 3 seconds, and then the clock will be displayed. ● To re-display the code, switch the power on. "F61" will be redisplayed, and then after 3 seconds the clock will be displayed and the power will automatically switch off.	 Speaker(L) (SB-HD81) Speaker(R) (SB-HD81) CD Changer (SL-HD81) Tuner (ST-HD81) Cassette Deck (RS-HD81) Amplifier (SE-HD81) U70CD U70DECK

Display contents

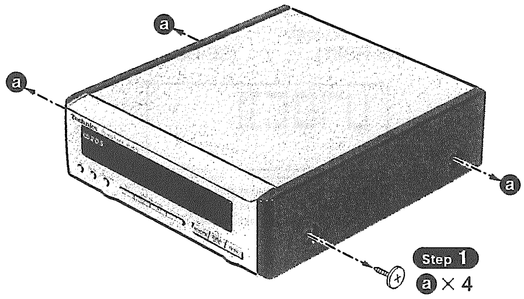
Display code	Problem or condition	Correction procedure
U70 CD **U70 DECK** (displayed automatically)	A bus-line communications error has occurred as a result of the flat cables being inserted incorrectly, thus preventing the system from operating. 1. If "U70" is displayed on the tuner, the Cassette deck or CD changer cannot be operated by remote control.	 Tuner (ST-HD81) CD Changer (SL-HD81) Amplifier (SE-HD81) Cassette deck (RS-HD81) 1. To check for correct insertion of the flat cables ①Match each connector with the color (black/ white) of the connection port and insert until you hear a click. ②Insert the flat cables at the back of the unit in the order indicated. Make sure the white side of the cable is on your right side.  2. Breakage of flat cable (Check and replace as necessary.) 3. If the problem is not corrected by items (1.) and (2.) above, this indicates a faulty IC. **ST-HD81:** IC901 (M38198MC092F) **SL-HD81:** IC301 (LC66538A4K20) **RS-HD81:** IC701 (M37471M4685F) Check these IC's and replace as necessary.
F61	When the power switch is switched on, it automatically switches back off, making it impossible to switch power on.	● Faulty amplifier (SE-HD81) output IC (IC505, 506). (When a DC voltage is applied to the speaker terminals.)

Operation Checks and Main Component Replacement Procedures

NOTE

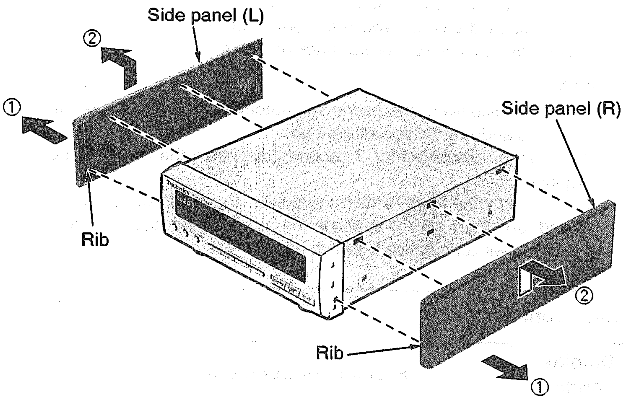
1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**

1. Checking for the RDS P.C.B., tuner P.C.B. and FL P.C.B.



Step 1
ⓐ × 4

Step 2
Remove the side panel (L),(R).
- Spread the lower part of the side panels in the direction of arrow (➡①) to release the ribs, and then lift to remove the side panels (➡②).

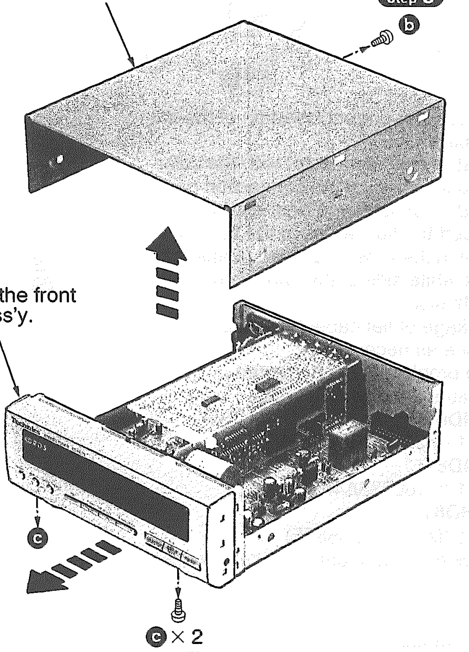


Side panel (L)
②
①
Side panel (R)
Rib
②
Rib
①

Step 4
Remove the cabinet.

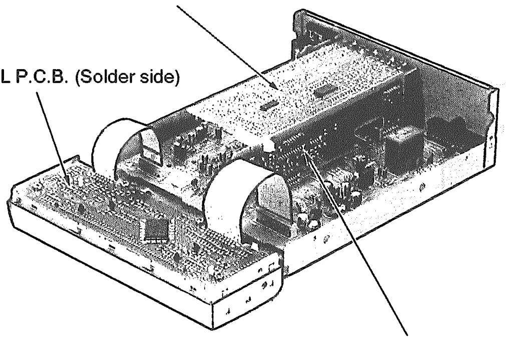
Step 3
ⓑ

Step 6
Pull out the front panel ass'y.



ⓒ × 2
Step 5

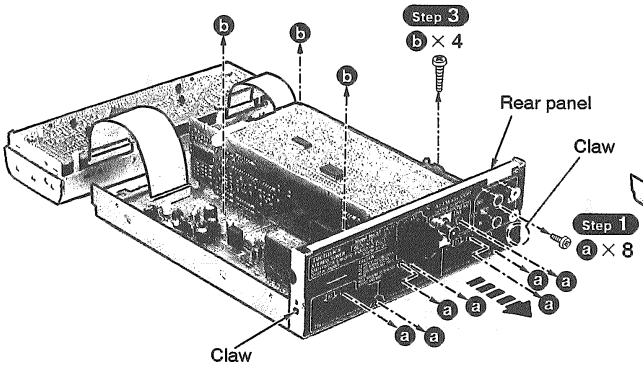
- **Check the RDS P.C.B., tuner P.C.B. and FL P.C.B. as shown below.**



Tuner P.C.B. (Solder side)
FL P.C.B. (Solder side)
RDS P.C.B. (Solder side)

2. Checking for the main P.C.B.

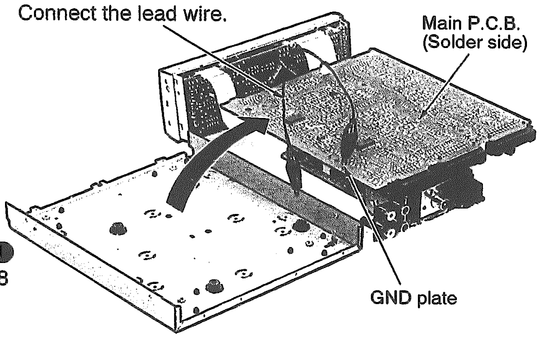
• Follow Step 1 ~ Step 6 in item 1 on page 4.


b
b
b
Step 3
b × 4
Rear panel
Claw
Step 1
a × 8
a
a
a
a
a
a
a
Claw

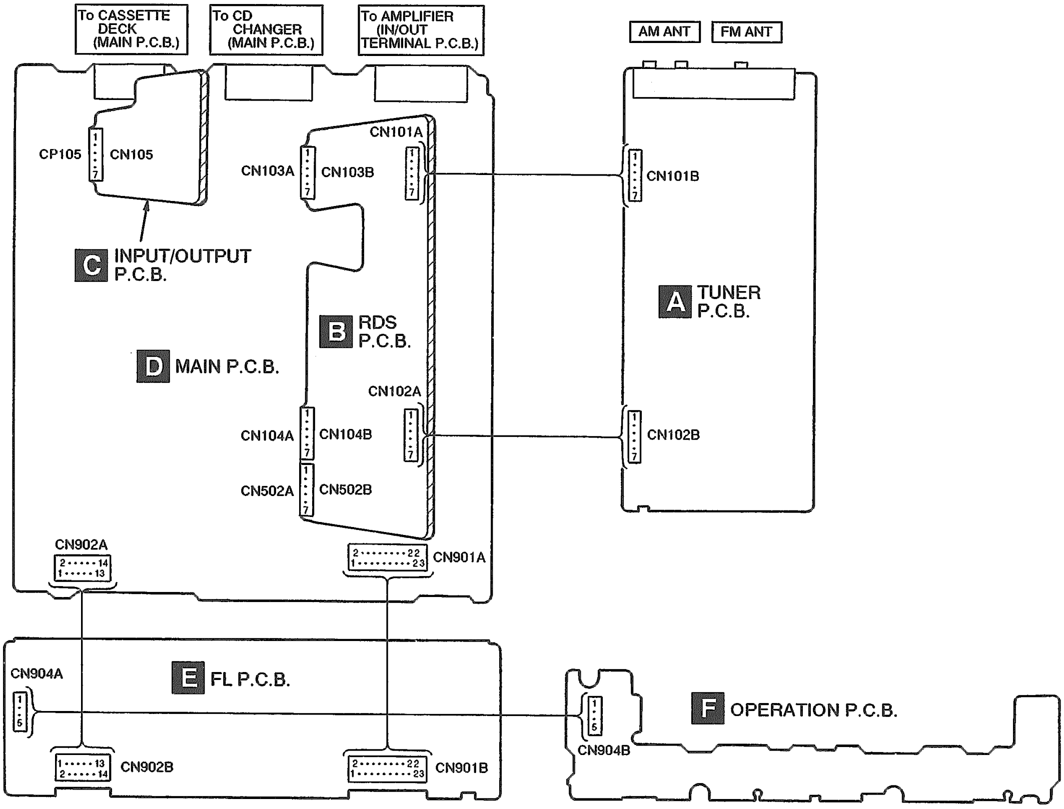
Step 2
Release the 2 claws, and then remove the rear panel.

• Check the main P.C.B. as shown below.

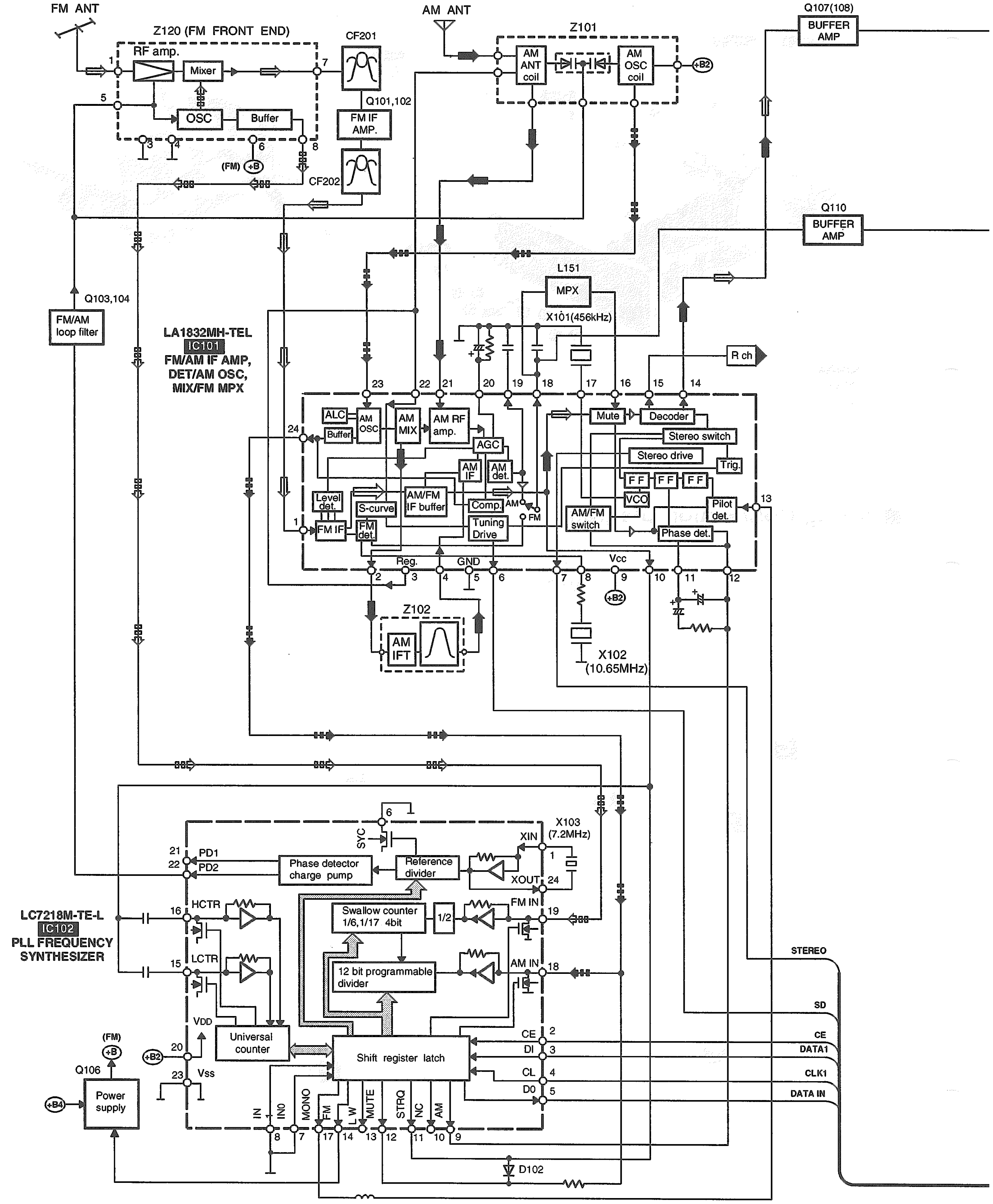
Step 4
Connect the lead wire.

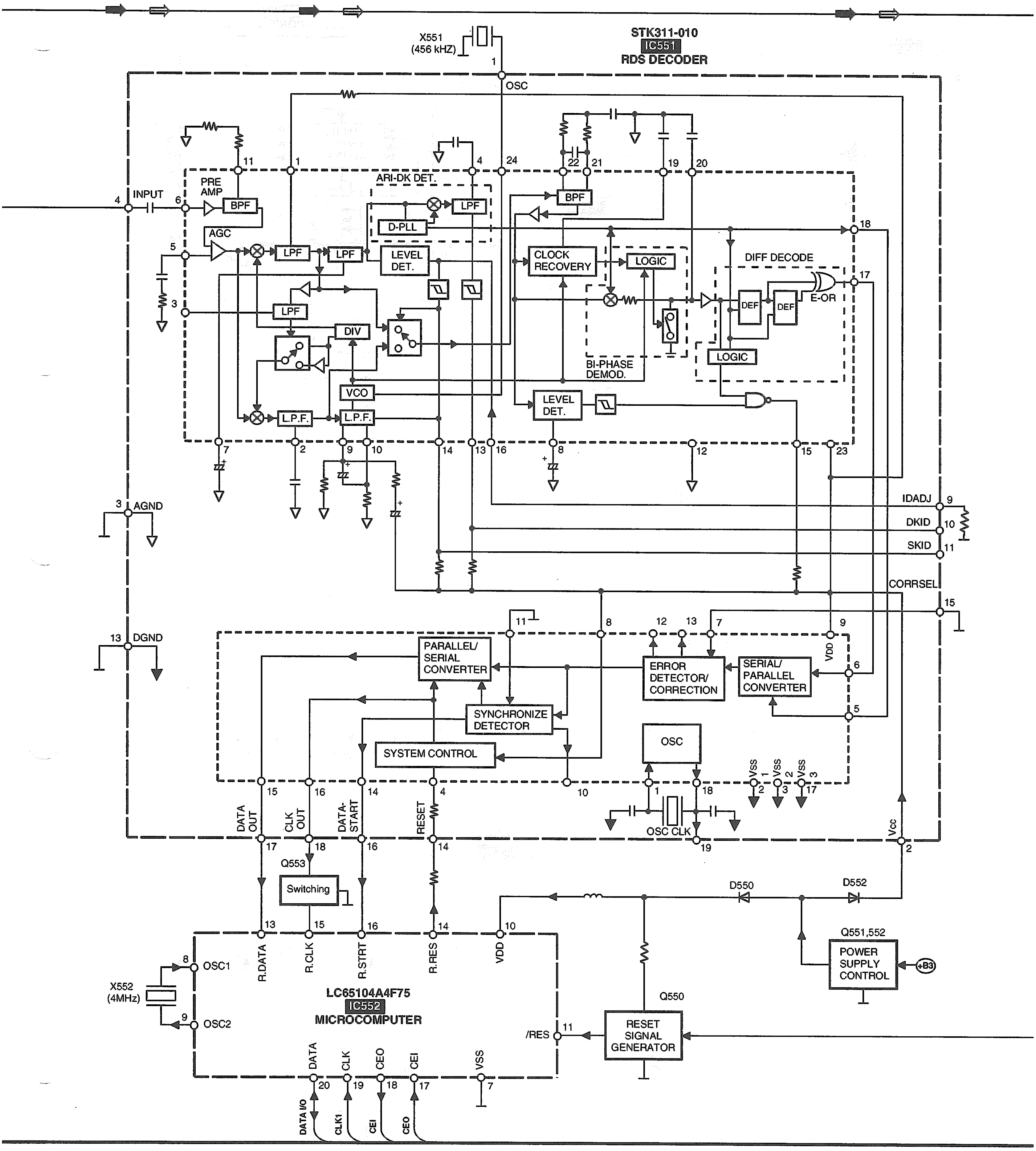

Main P.C.B.
(Solder side)
GND plate

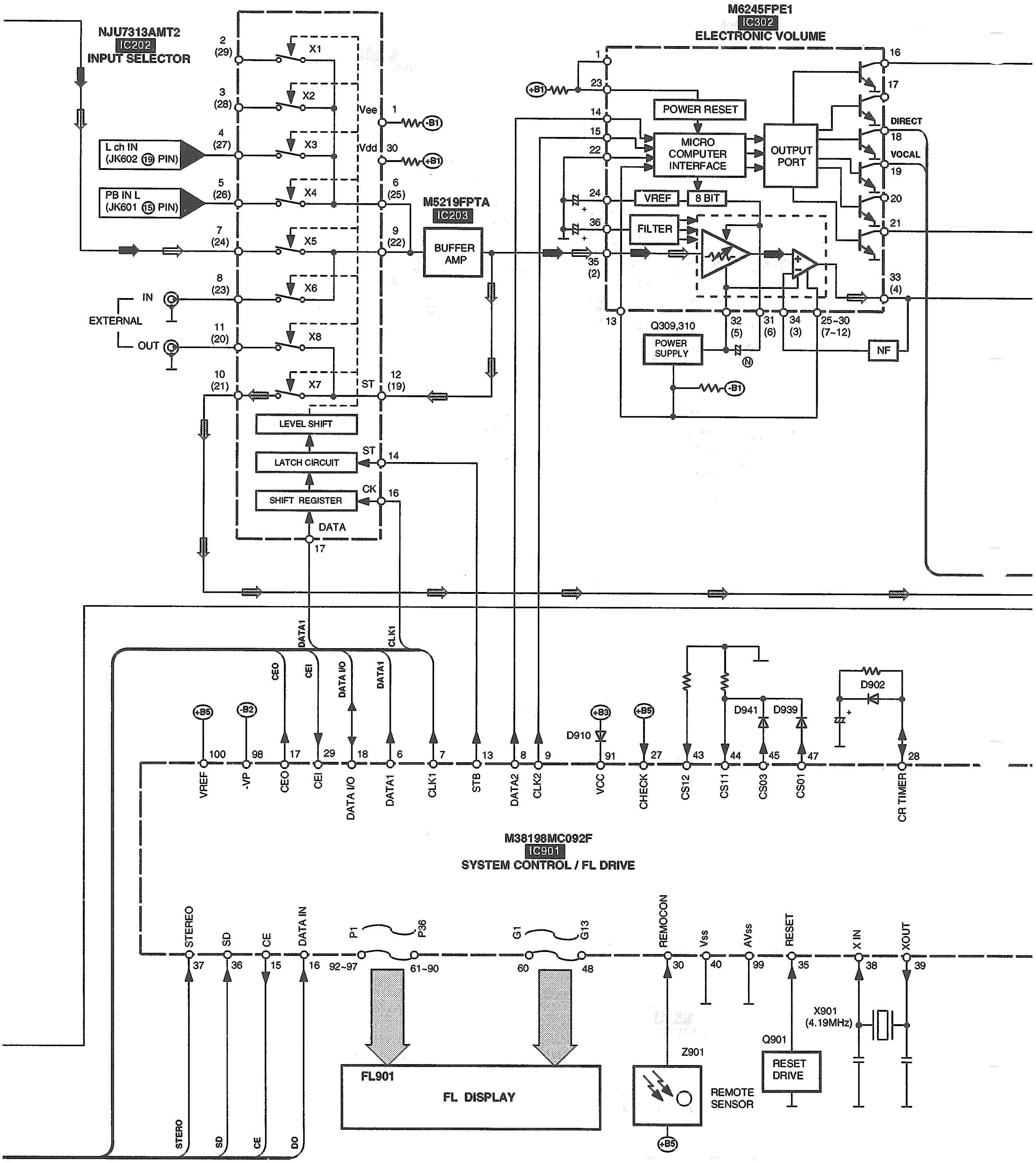
Wiring Connection Diagram


To CASSETTE DECK (MAIN P.C.B.)
To CD CHANGER (MAIN P.C.B.)
To AMPLIFIER (IN/OUT TERMINAL P.C.B.)
AM ANT
FM ANT
CP105
CN105
CN101A
CN103A
CN103B
CN101B
C INPUT/OUTPUT P.C.B.
A TUNER P.C.B.
B RDS P.C.B.
D MAIN P.C.B.
CN102A
CN104A
CN104B
CN102B
CN502A
CN502B
CN902A
CN901A
CN904A
E FL P.C.B.
F OPERATION P.C.B.
CN904B
CN902B
CN901B

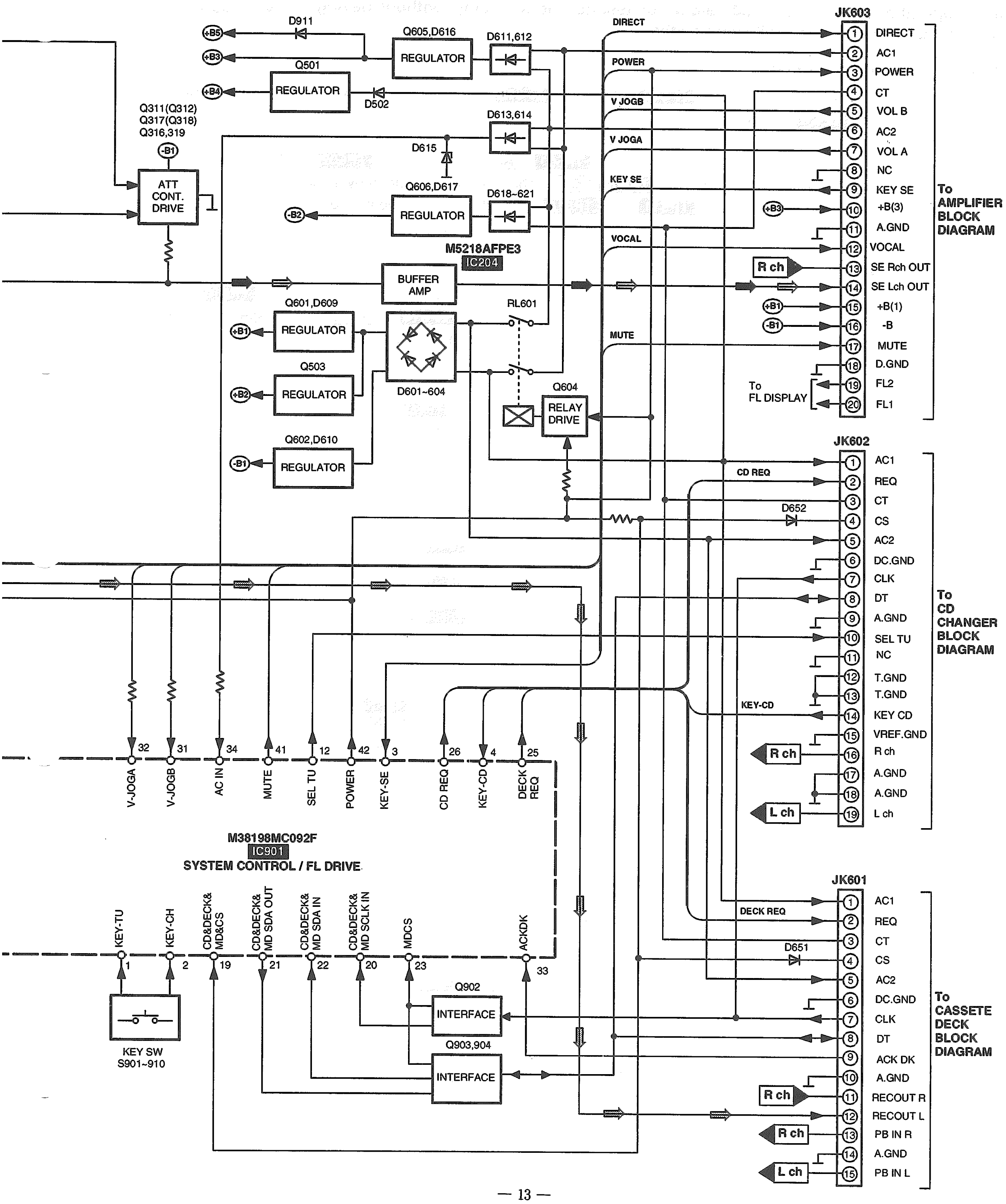
■Block Diagram


FM ANT
Z120 (FM FRONT END)
RF amp.
Mixer
OSC
Buffer
(FM) +B
CF201
Q101,102
FM IF AMP.
CF202
AM ANT
Z101
AM ANT coil
AM OSC coil
+B2
Q107(108)
BUFFER AMP
Q110
BUFFER AMP
Q103,104
FM/AM loop filter
LA1832MH-TEL
IC101
FM/AM IF AMP, DET/AM OSC, MIX/FM MPX
L151
MPX
X101(456kHz)
R ch
ALC
AM OSC
Buffer
AM MIX
AM RF amp.
AGC
AM IF
AM det.
Level det.
S-curve
AM/FM IF buffer
Comp.
AM
FM
FM IF
FM det.
Tuning Drive
Mute
Decoder
Stereo switch
Stereo drive
Trig.
FF
FF
FF
VCO
AM/FM switch
Pilot det.
Phase det.
Reg.
GND
Vcc
+B2
Z102
AM IFT
X102 (10.65MHz)
X103 (7.2MHz)
SYC
XIN
XOUT
PD1
PD2
Phase detector charge pump
Reference divider
HCTR
LCTR
Swallow counter 1/6,1/17 4bit
1/2
FM IN
AM IN
12 bit programmable divider
LC7218M-TE-L
IC102
PLL FREQUENCY SYNTHESIZER
VDD
Universal counter
Shift register latch
CE
DI
CL
D0
Vss
+B2
(FM) +B
Q106
+B4
Power supply
IN
IN0
MONO
FM
LW
MUTE
STRQ
NC
MW
AM
D102
STEREO
SD
CE
DATA1
CLK1
DATA IN


X551
(456 kHZ)
STK311-010
IC551
RDS DECODER
OSC
INPUT
AGND
DGND
PRE AMP
BPF
AGC
ARI-DK DET.
D-PLL
LPF
LEVEL DET.
L.P.F.
DIV
VCO
CLOCK RECOVERY
LOGIC
BI-PHASE DEMOD.
DIFF DECODE
DEF
E-OR
IDADJ
DKID
SKID
CORRSEL
PARALLEL/ SERIAL CONVERTER
SYNCHRONIZE DETECTOR
SYSTEM CONTROL
ERROR DETECTOR/ CORRECTION
SERIAL/ PARALLEL CONVERTER
OSC
VDD
VSS 1
VSS 2
VSS 3
OSC CLK
DATA OUT
CLK OUT
DATA-START
RESET
Vcc
Q553
Switching
D550
D552
Q551,552
POWER SUPPLY CONTROL
+B3
Q550
RESET SIGNAL GENERATOR
X552
(4MHz)
OSC1
OSC2
R.DATA
R.CLK
R.STRT
R.RES
VDD
LC65104A4F75
IC552
MICROCOMPUTER
/RES
DATA
CLK
CEO
CEI
VSS
DATA I/O
CLK1
CEI
CEO


NJU7313AMT2
IC202
INPUT SELECTOR
L ch IN
(JK602 ⑲ PIN)
PB IN L
(JK601 ⑮ PIN)
EXTERNAL
IN
OUT
X1
X2
X3
X4
X5
X6
X8
X7
Vee
Vdd
ST
CK
DATA
LEVEL SHIFT
LATCH CIRCUIT
SHIFT REGISTER
-B1
+B1
M5219FPTA
IC203
BUFFER AMP
M6245FPE1
IC302
ELECTRONIC VOLUME
POWER RESET
MICRO COMPUTER INTERFACE
OUTPUT PORT
VREF
8 BIT
FILTER
DIRECT
VOCAL
NF
Q309,310
POWER SUPPLY
N
DATA1
CLK1
CEO
CEI
DATA I/O
+B5
-B2
+B3
D910
D941
D939
D902
VREF
-VP
CEO
CEI
DATA I/O
DATA1
CLK1
STB
DATA2
CLK2
VCC
CHECK
CS12
CS11
CS03
CS01
CR TIMER
M38198MC092F
IC901
SYSTEM CONTROL / FL DRIVE
STEREO
SD
CE
DATA IN
P1
P36
G1
G13
REMOCON
Vss
AVss
RESET
X IN
XOUT
92~97
61~90
60
48
FL901
FL DISPLAY
Z901
REMOTE SENSOR
Q901
RESET DRIVE
X901
(4.19MHz)
STERO
SD
CE
DO

●Signal line ⇨: FM signal ▯▯⇨: FM OSC signal ➡: AM signal ▮▮➡: AM OSC signal ⇨: Rec out signal
※ ( ) indicates pin No. of right channel.



D911
Q605,D616
REGULATOR
D611,612
+B5
+B3
Q501
REGULATOR
+B4
D502
Q311(Q312)
Q317(Q318)
Q316,319
-B1
ATT CONT. DRIVE
D613,614
D615
Q606,D617
REGULATOR
D618~621
-B2
M5218AFPE3
IC204
BUFFER AMP
Q601,D609
REGULATOR
+B1
RL601
Q503
REGULATOR
+B2
D601~604
Q604
RELAY DRIVE
Q602,D610
REGULATOR
-B1
DIRECT
POWER
V JOGB
V JOGA
KEY SE
VOCAL
MUTE
CD REQ
D652
JK603
1 DIRECT
2 AC1
3 POWER
4 CT
5 VOL B
6 AC2
7 VOL A
8 NC
9 KEY SE
10 +B(3)
11 A.GND
12 VOCAL
13 SE Rch OUT
14 SE Lch OUT
15 +B(1)
16 -B
17 MUTE
18 D.GND
19 FL2
20 FL1
+B3
R ch
+B1
-B1
To FL DISPLAY
To AMPLIFIER BLOCK DIAGRAM
JK602
1 AC1
2 REQ
3 CT
4 CS
5 AC2
6 DC.GND
7 CLK
8 DT
9 A.GND
10 SEL TU
11 NC
12 T.GND
13 T.GND
14 KEY CD
15 VREF.GND
16 R ch
17 A.GND
18 A.GND
19 L ch
KEY-CD
R ch
L ch
To CD CHANGER BLOCK DIAGRAM
32 V-JOGA
31 V-JOGB
34 AC IN
41 MUTE
12 SEL TU
42 POWER
3 KEY-SE
26 CD REQ
4 KEY-CD
25 DECK REQ
M38198MC092F
IC901
SYSTEM CONTROL / FL DRIVE
1 KEY-TU
2 KEY-CH
19 CD&DECK& MD&CS
21 CD&DECK& MD SDA OUT
22 CD&DECK& MD SDA IN
20 CD&DECK& MD SCLK IN
23 MDCS
33 ACKDK
KEY SW
S901~910
Q902
INTERFACE
Q903,904
INTERFACE
DECK REQ
D651
JK601
1 AC1
2 REQ
3 CT
4 CS
5 AC2
6 DC.GND
7 CLK
8 DT
9 ACK DK
10 A.GND
11 RECOUT R
12 RECOUT L
13 PB IN R
14 A.GND
15 PB IN L
R ch
R ch
L ch
To CASSETE DECK BLOCK DIAGRAM

■ To Supply Power Source

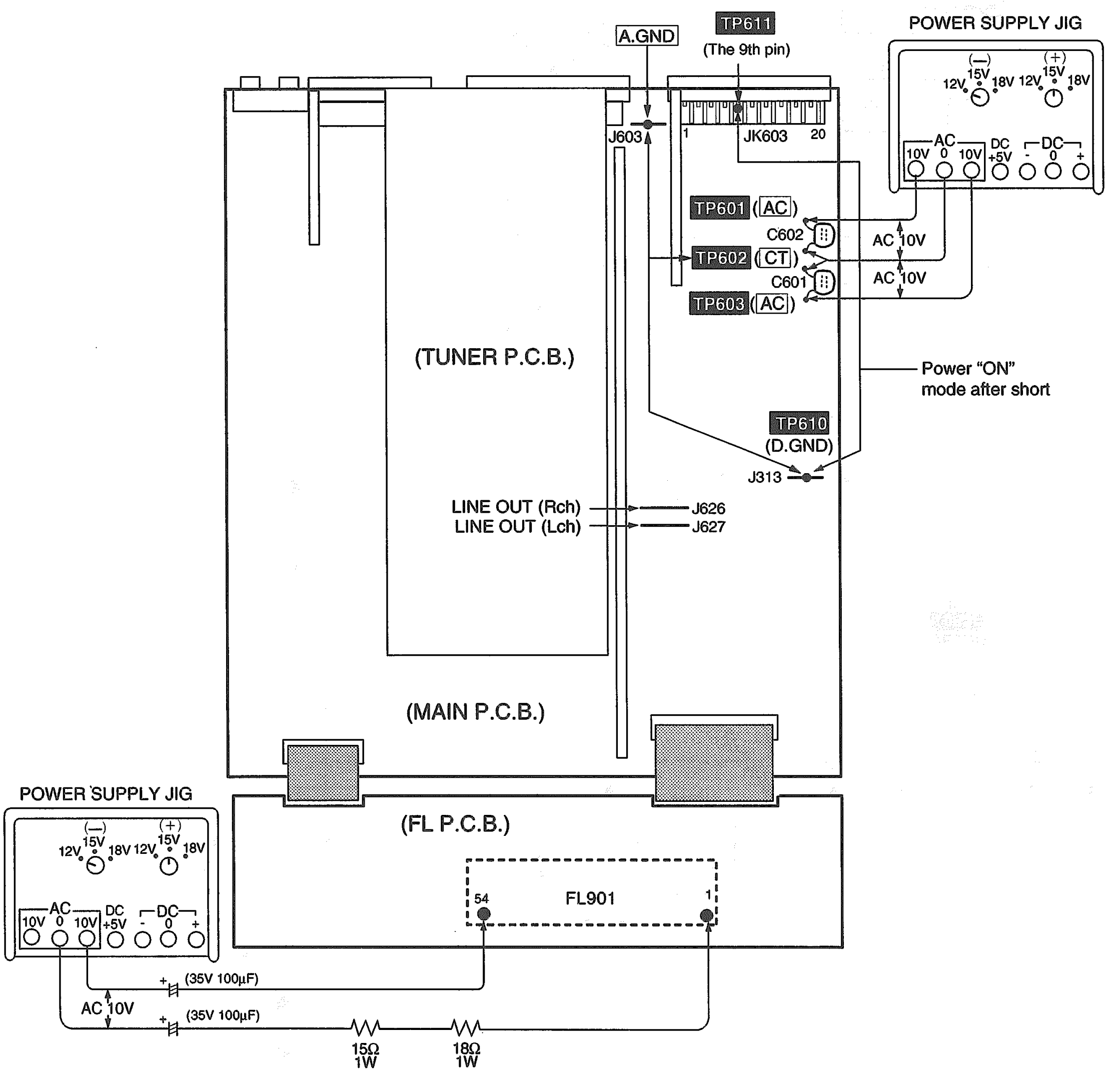
This unit ST-HD81 is designed to operate on power supplied from the Amplifier SE-HD81.
When operating the unit ST-HD81 alone for testing and servicing, without having power supplied from the Amplifier SE-HD81, use the following method.

Power Supply to Main Circuit

1. Short the section between the test points TP602 (CT) and TP610 (D.GND), and as well as the section between the test points A.GND and TP610 (D.GND).
2. Connect the 10V AC power to pin ① of the indicator module FL901 and the GND terminal to pin (54) of the same FL901 module.
3. Apply 10V AC power to the section between the point TP601 (AC) and the point TP602 (CT) as well as the section between the point TP603 (AC) and the point TP602 (CT). This unit comes to stand-by mode.
4. Short the section between the test points TP611 and TP610 (D.GND) for a moment. The main circuit comes to power ON mode. (Whenever this operation is performed, power, ON/OFF mode is repeated.)

To Check Signals

Connect the oscilloscope to the section between the point LINE OUT (Rch) of jumper J610 and the point TP610 (D.GND) as well as the section between the point LINE OUT (Lch) of jumper J611 and the TP610 (D.GND), or the speaker with the built-in amplifier to the EXTERNAL (OUT) terminals and check if the signals are outputting from this unit.


A.GND
TP611
(The 9th pin)
POWER SUPPLY JIG
(–)
(+)
12V
15V
18V
AC
DC
+5V
10V
0
J603
1
JK603
20
TP601 (AC)
C602
TP602 (CT)
C601
TP603 (AC)
AC 10V
AC 10V
(TUNER P.C.B.)
Power "ON"
mode after short
TP610
(D.GND)
J313
LINE OUT (Rch)
LINE OUT (Lch)
J626
J627
(MAIN P.C.B.)
POWER SUPPLY JIG
(FL P.C.B.)
FL901
54
1
(35V 100μF)
AC 10V
(35V 100μF)
15Ω
1W
18Ω
1W

Schematic Diagram (Parts list on pages 29~32.)

- This schematic diagram may be modified at any time with development of new technology.

A TUNER CIRCUIT 16, 17
B RDS CIRCUIT 18
C INPUT/OUTPUT CIRCUIT 19
D MAIN CIRCUIT .... 19~21
E FL CIRCUIT 22, 23
F OPERATION CIRCUIT 23

Notes:

- **S901**: Record timer switch (⏲ REC)
- **S902**: Play timer switch (⏲ PLAY)
- **S907**: Tuning mode select switch (TUNING MODE)
- **S903**: Clock/timer switch (CLOCK/TIMER)
- **S904**: Set switch (SET)
- **S905, 906**: Tuning/Time adjust switch (TUNING/TIME ADJUST)
  (S905: DOWN, S906: UP)
- **S908**: Source input select switch (INPUT SELECTOR)
- **S909**: RDS display mode switch (RDS DISPLAY MODE)
- **S910**: FM/AM switch (FM/AM)

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

- Voltage values and waveforms are measured as indicated in the schematic diagram when test points between TP602 and TP610, and between TP610 and A. GND, and between TP609 and A. GND are shorted.

  No mark: FM mode ( ): AM mode

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-nose (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

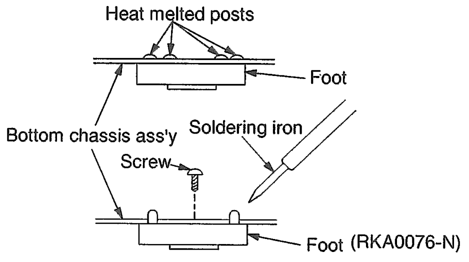
- **Caution!**
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

- Voltage and signal line

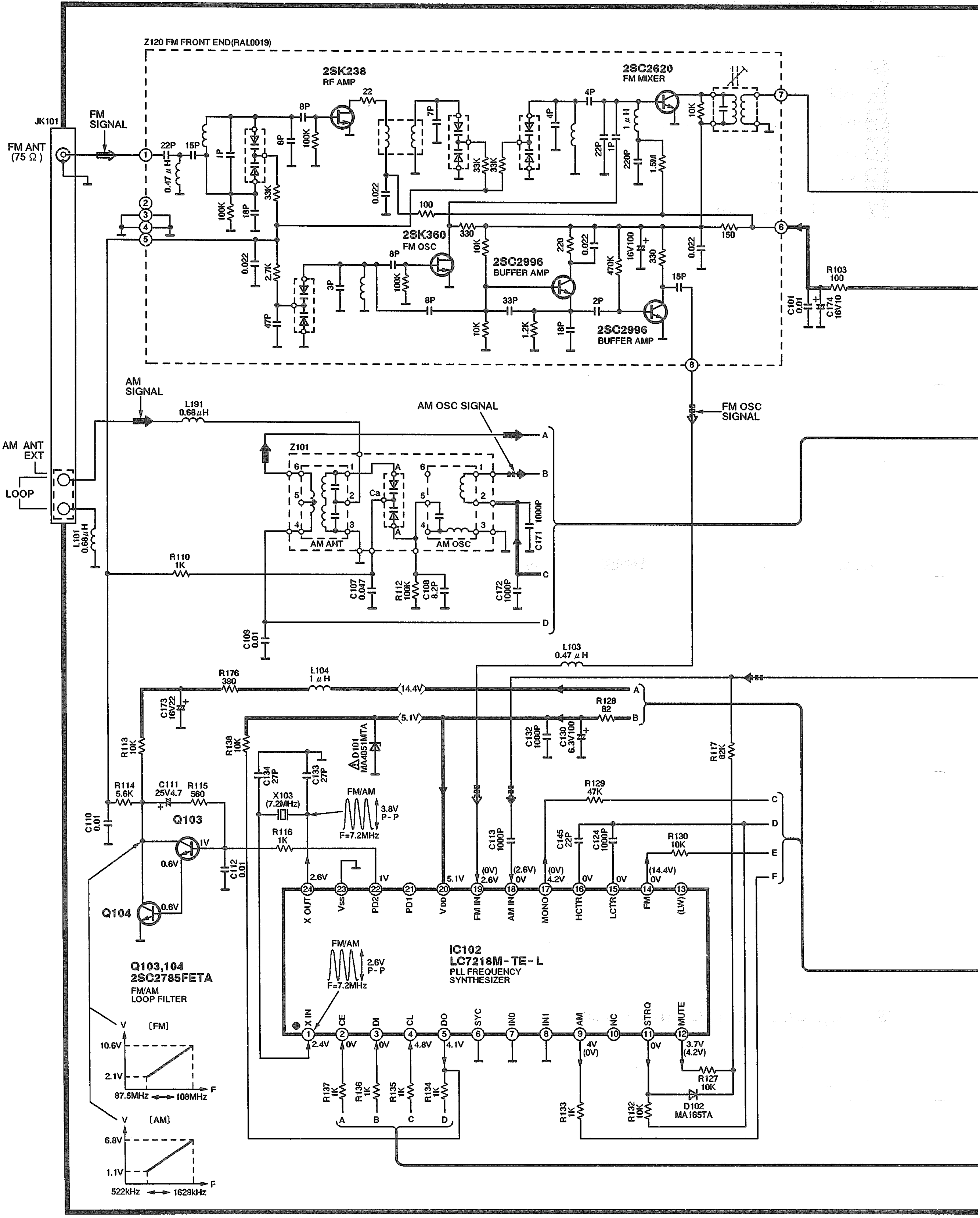
━►━	: Positive voltage line	■►■	: Negative voltage line
⇨	: FM signal line	▫▫▫⇨	: FM OSC signal line
➡	: AM signal line	▪▪▪➡	: AM OSC signal line
▨⇨	: REC OUT line		

Replacement of the Foot

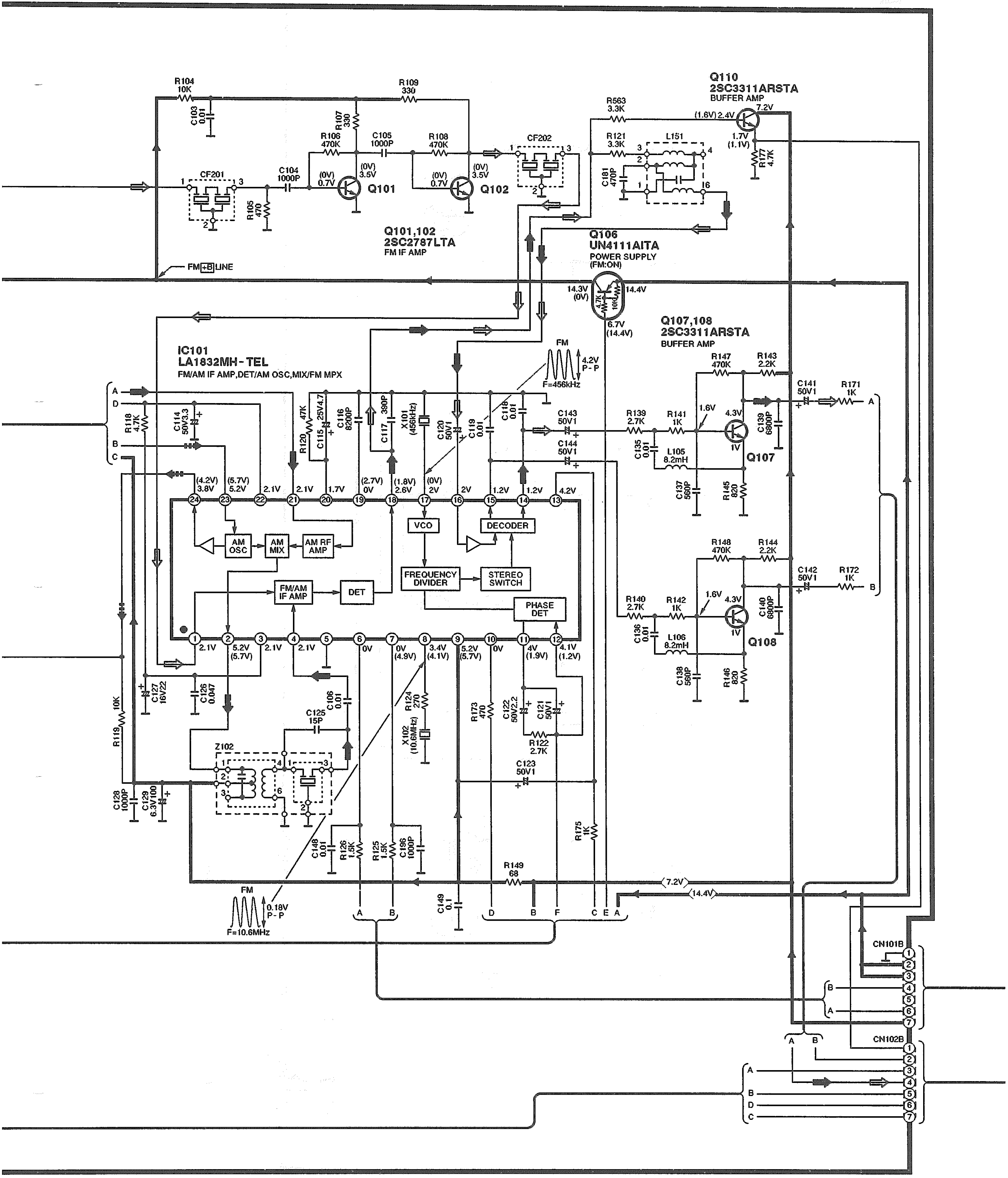
1. Remove the 4 heat melted posts on the Bottom board ass'y with a pair of nippers or similar tool.
2. To replace the foot (RKA0076-N) on the Bottom board ass'y melt the 4 posts with a soldering iron or install it with a screw (XTB3+6J).



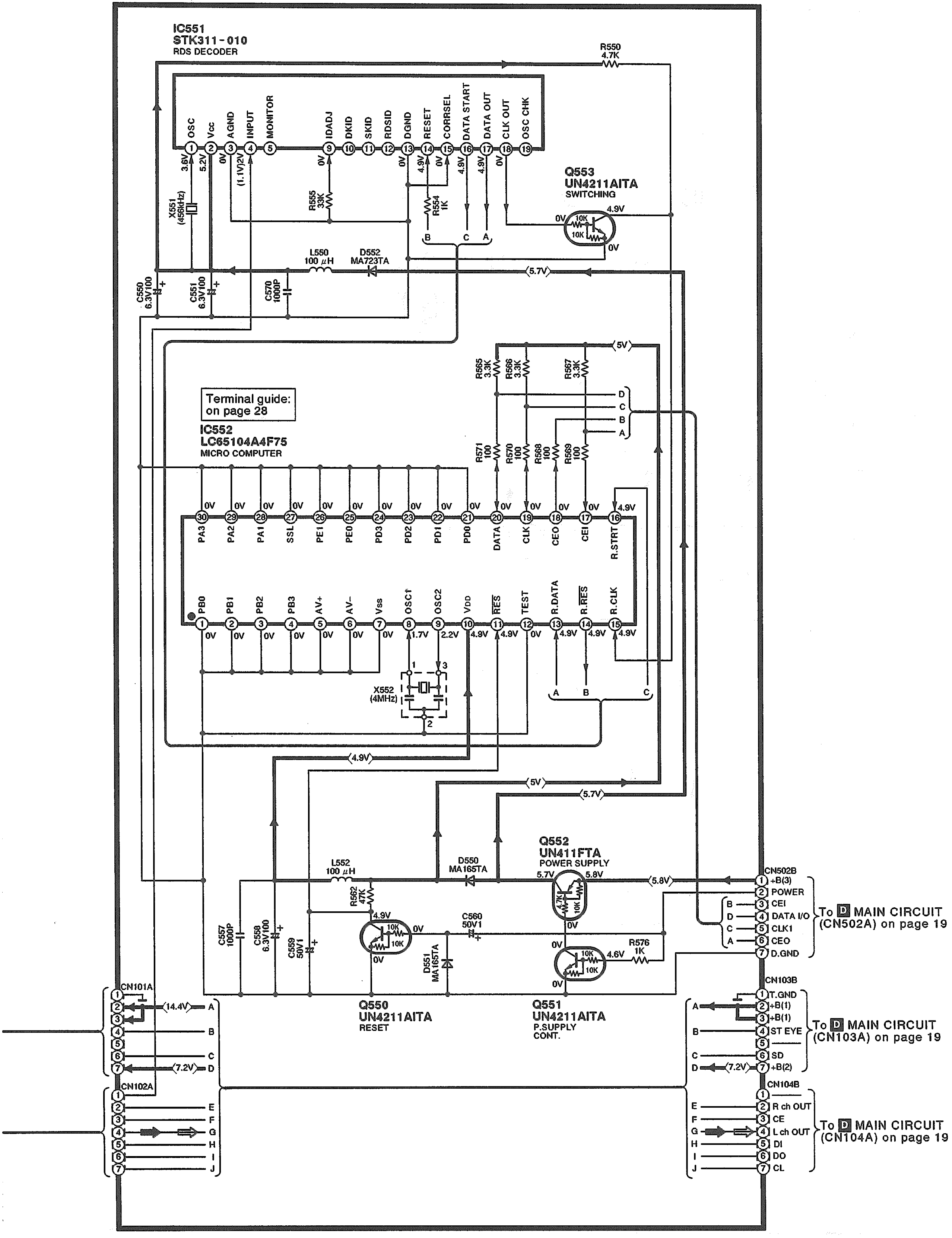
A TUNER CIRCUIT (P.C.Board:on page 24)


Z120 FM FRONT END(RAL0019)
2SK238
RF AMP
2SC2620
FM MIXER
2SK360
FM OSC
2SC2996
BUFFER AMP
2SC2996
BUFFER AMP
JK101
FM ANT
(75 Ω)
FM SIGNAL
AM SIGNAL
L191
0.68μH
AM ANT
EXT
LOOP
L101
0.68μH
R110
1K
Z101
AM ANT
AM OSC
Ca
AM OSC SIGNAL
FM OSC SIGNAL
C171
1000P
C172
1000P
C107
0.047
R112
100K
C108
8.2P
C109
0.01
R103
100
C101
0.01
C174
16V10
L103
0.47μH
R176
390
L104
1μH
(14.4V)
(5.1V)
C173
16V22
R128
82
R113
10K
R138
10K
D101
MA4051MTA
C134
27P
C133
27P
X103
(7.2MHz)
FM/AM
3.8V
P-P
F=7.2MHz
C132
1000P
C130
6.3V100
R117
82K
R129
47K
R114
5.6K
C111
25V4.7
R115
560
Q103
C110
0.01
R116
1K
C112
0.01
Q104
C113
1000P
C145
22P
C124
1000P
R130
10K
IC102
LC7218M-TE-L
PLL FREQUENCY
SYNTHESIZER
X OUT
Vss
PD2
PD1
VDD
FM IN
AM IN
MONO
HCTR
LCTR
FM
(LW)
X IN
CE
DI
CL
DO
SYC
IN0
IN1
AM
NC
STRO
MUTE
FM/AM
2.6V
P-P
F=7.2MHz
Q103,104
2SC2785FETA
FM/AM
LOOP FILTER
V (FM)
10.6V
2.1V
87.5MHz ⟷ 108MHz
F
V (AM)
6.8V
1.1V
522kHz ⟷ 1629kHz
F
R137
1K
R136
1K
R135
1K
R134
1K
R133
1K
R132
10K
R127
10K
D102
MA165TA

Notes: ● ⇨ : FM signal ● ⇨ : FM OSC signal
● ➡ : AM signal ● ➡ : AM OSC signal


R104
10K
C103
0.01
R109
330
R107
330
R106
470K
C105
1000P
R108
470K
CF201
C104
1000P
R105
470
(0V)
0.7V
(0V)
3.5V
Q101
(0V)
0.7V
(0V)
3.5V
Q102
CF202
Q101,102
2SC2787LTA
FM IF AMP
FM +B LINE
Q110
2SC3311ARSTA
BUFFER AMP
R563
3.3K
(1.6V) 2.4V
7.2V
1.7V
(1.1V)
R177
4.7K
R121
3.3K
L151
C181
470P
Q106
UN4111AITA
POWER SUPPLY
(FM:ON)
14.3V
(0V)
14.4V
4.7K
10K
6.7V
(14.4V)
Q107,108
2SC3311ARSTA
BUFFER AMP
IC101
LA1832MH-TEL
FM/AM IF AMP,DET/AM OSC,MIX/FM MPX
FM
4.2V
P-P
F=456kHz
R118
4.7K
C114
50V3.3
R120
47K
C115
25V4.7
C116
8200P
C117
390P
X101
(456kHz)
C120
50V1
C119
0.01
C118
0.01
C143
50V1
C144
50V1
R147
470K
R143
2.2K
C141
50V1
R171
1K
R139
2.7K
R141
1K
1.6V
4.3V
C139
6800P
C135
0.01
L105
8.2mH
1V
Q107
C137
560P
R145
820
(4.2V)
3.8V
(5.7V)
5.2V
2.1V
2.1V
1.7V
(2.7V)
0V
(1.8V)
2.6V
(0V)
2V
2V
1.2V
1.2V
4.2V
VCO
DECODER
AM OSC
AM MIX
AM RF AMP
FREQUENCY DIVIDER
STEREO SWITCH
FM/AM IF AMP
DET
PHASE DET
R148
470K
R144
2.2K
C142
50V1
R172
1K
R140
2.7K
R142
1K
1.6V
4.3V
C140
6800P
C136
0.01
L106
8.2mH
1V
Q108
C138
560P
R146
820
2.1V
5.2V
(5.7V)
2.1V
2.1V
0V
0V
(4.9V)
3.4V
(4.1V)
5.2V
(5.7V)
0V
4V
(1.9V)
4.1V
(1.2V)
C127
16V22
C126
0.047
C106
0.01
C125
15P
R124
270
X102
(10.6MHz)
R173
470
C122
50V2.2
C121
50V1
R122
2.7K
C123
50V1
R119
10K
Z102
C128
1000P
C129
6.3V100
C148
0.01
R126
1.5K
R125
1.5K
C196
1000P
C149
0.1
R149
68
R175
1K
(7.2V)
(14.4V)
FM
0.18V
P-P
F=10.6MHz
CN101B
CN102B
A
B
C
D
E
F

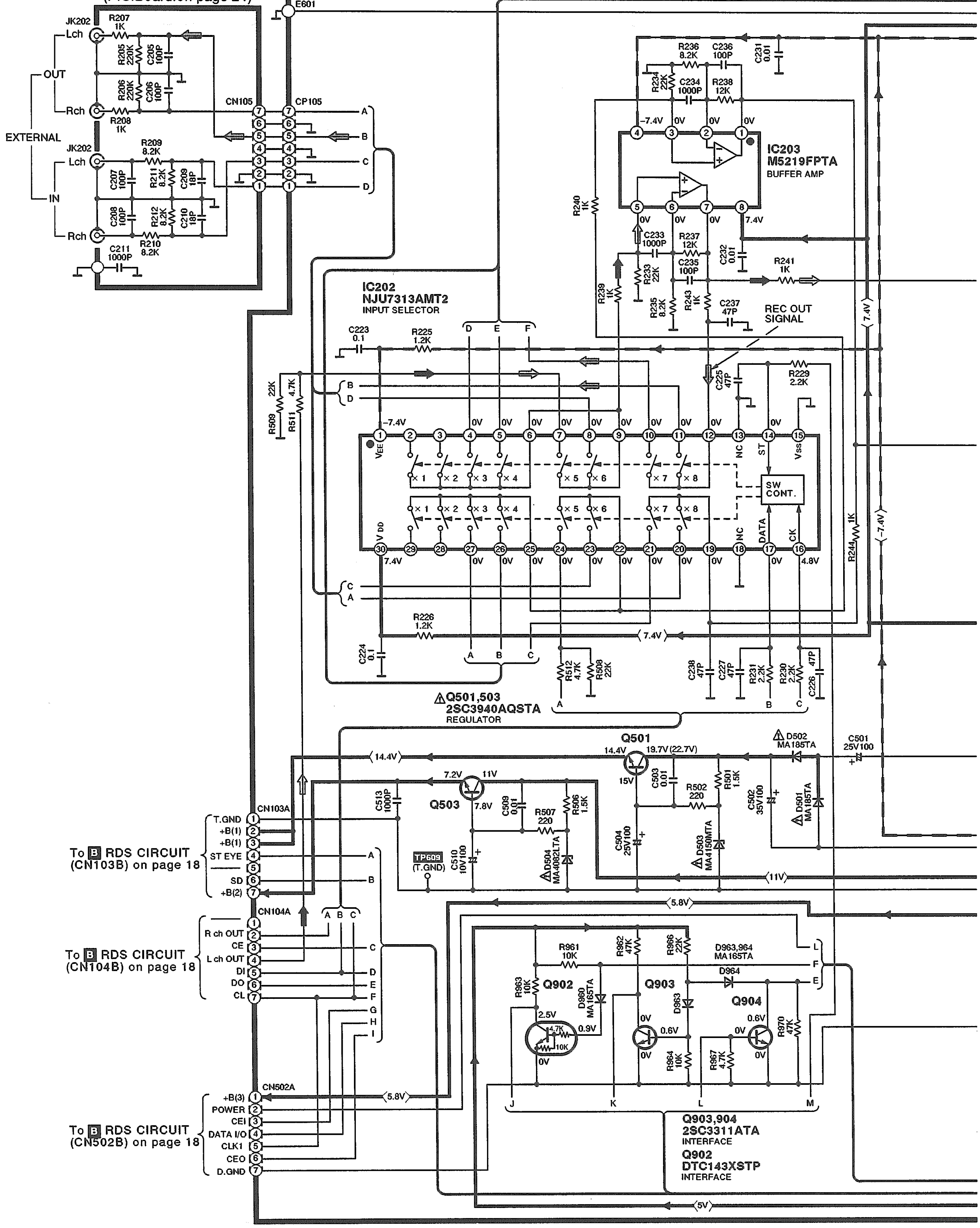
B RDS CIRCUIT (P.C.Board:on page 24)

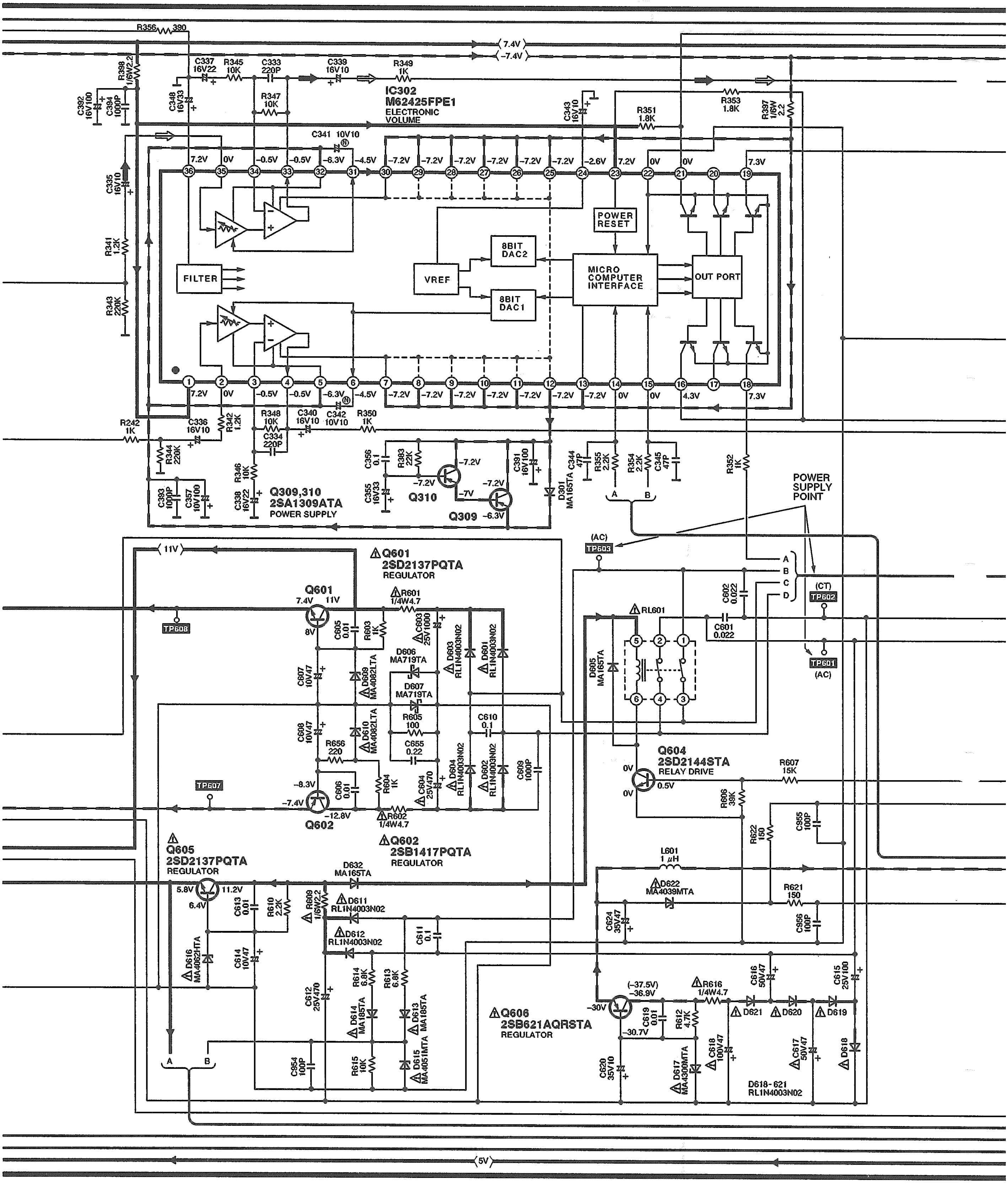

IC551
STK311-010
RDS DECODER
OSC
Vcc
AGND
INPUT
MONITOR
IDADJ
DKID
SKID
RDSID
DGND
RESET
CORRSEL
DATA START
DATA OUT
CLK OUT
OSC CHK
R550
4.7K
Q553
UN4211AITA
SWITCHING
X551 (456kHz)
R555 33K
R554 1K
L550 100 µH
D552 MA723TA
C550 6.3V100
C551 6.3V100
C570 1000P
Terminal guide: on page 28
IC552
LC65104A4F75
MICRO COMPUTER
R565 3.3K
R566 3.3K
R567 3.3K
R571 100
R570 100
R568 100
R569 100
PA3
PA2
PA1
SSL
PE1
PE0
PD3
PD2
PD1
PD0
DATA
CLK
CEO
CEI
R.STRT
PB0
PB1
PB2
PB3
AV+
AV-
Vss
OSC1
OSC2
VDD
RES
TEST
R.DATA
R.RES
R.CLK
X552 (4MHz)
Q552
UN411FTA
POWER SUPPLY
L552 100 µH
D550 MA165TA
R562 47K
C557 1000P
C558 6.3V100
C559 50V1
C560 50V1
D551 MA165TA
R576 1K
Q550
UN4211AITA
RESET
Q551
UN4211AITA
P.SUPPLY CONT.
CN502B
+B(3)
POWER
CEI
DATA I/O
CLK1
CEO
D.GND
To D MAIN CIRCUIT (CN502A) on page 19
CN101A
CN102A
CN103B
T.GND
+B(1)
+B(1)
ST EYE
SD
+B(2)
To D MAIN CIRCUIT (CN103A) on page 19
CN104B
R ch OUT
CE
L ch OUT
DI
DO
CL
To D MAIN CIRCUIT (CN104A) on page 19
5.7V
5V
4.9V
5.8V
14.4V
7.2V

Notes: ● ⇨ : FM signal ● ▨⇨ : Rec out signal
● ➡ : AM signal

C INPUT/OUTPUT CIRCUIT
(P.C.Board:on page 24)

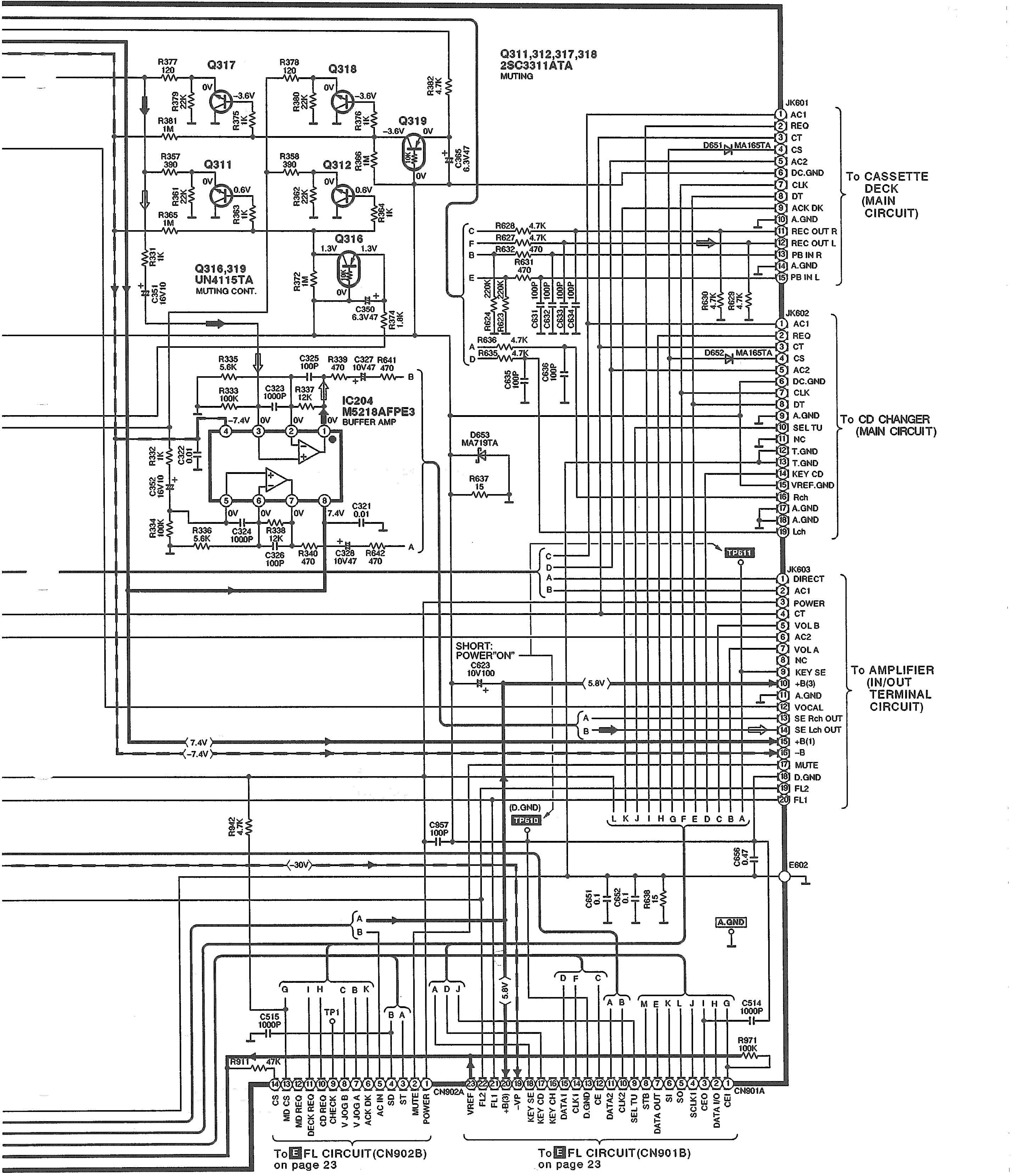
D MAIN CIRCUIT (P.C.Board:on page 25)


EXTERNAL
OUT
IN
JK202
Lch
Rch
R207 1K
R205 220K
C205 100P
R206 220K
C206 100P
R208 1K
R209 8.2K
C207 100P
R211 8.2K
C209 18P
C208 100P
R212 8.2K
C210 18P
R210 8.2K
C211 1000P
CN105
CP105
E601
A
B
C
D
IC202
NJU7313AMT2
INPUT SELECTOR
C223 0.1
R225 1.2K
R509 22K
R511 4.7K
-7.4V
0V
VEE
VDD
NC
ST
VSS
DATA
CK
SW CONT.
x 1
x 2
x 3
x 4
x 5
x 6
x 7
x 8
7.4V
4.8V
R226 1.2K
C224 0.1
(7.4V)
R512 4.7K
R508 22K
C238 47P
C227 47P
R231 2.2K
R230 2.2K
C226 47P
C225 47P
R229 2.2K
REC OUT SIGNAL
R236 8.2K
C236 100P
C231 0.01
R234 22K
C234 1000P
R238 12K
IC203
M5219FPTA
BUFFER AMP
R240 1K
C233 1000P
R237 12K
C232 0.01
C235 100P
R233 22K
R239 1K
R235 8.2K
R243 1K
C237 47P
R241 1K
R244 1K
(-7.4V)
ΔQ501,503
2SC3940AQSTA
REGULATOR
Q501
Q503
(14.4V)
14.4V
19.7V(22.7V)
15V
7.2V
11V
7.8V
C503 0.01
R502 220
R501 1.5K
C502 35V100
ΔD502 MA185TA
C501 25V100
ΔD501 MA185TA
C513 1000P
C509 0.01
R507 220
R506 1.5K
C504 25V100
ΔD503 MA4150MTA
ΔD504 MA4082LTA
TP609 (T.GND)
C510 10V100
(11V)
(5.8V)
CN103A
T.GND
+B(1)
ST EYE
SD
+B(2)
To B RDS CIRCUIT (CN103B) on page 18
CN104A
R ch OUT
CE
L ch OUT
DI
DO
CL
To B RDS CIRCUIT (CN104B) on page 18
E
F
G
H
I
R961 10K
R962 47K
R966 22K
D963,964 MA165TA
D964
R963 10K
Q902
D960 MA165TA
Q903
D963
Q904
2.5V
4.7K
10K
0.9V
0.6V
R970 47K
R964 10K
R967 4.7K
J
K
L
M
CN502A
+B(3)
POWER
CEI
DATA I/O
CLK1
CEO
D.GND
To B RDS CIRCUIT (CN502B) on page 18
Q903,904
2SC3311ATA
INTERFACE
Q902
DTC143XSTP
INTERFACE
(5V)

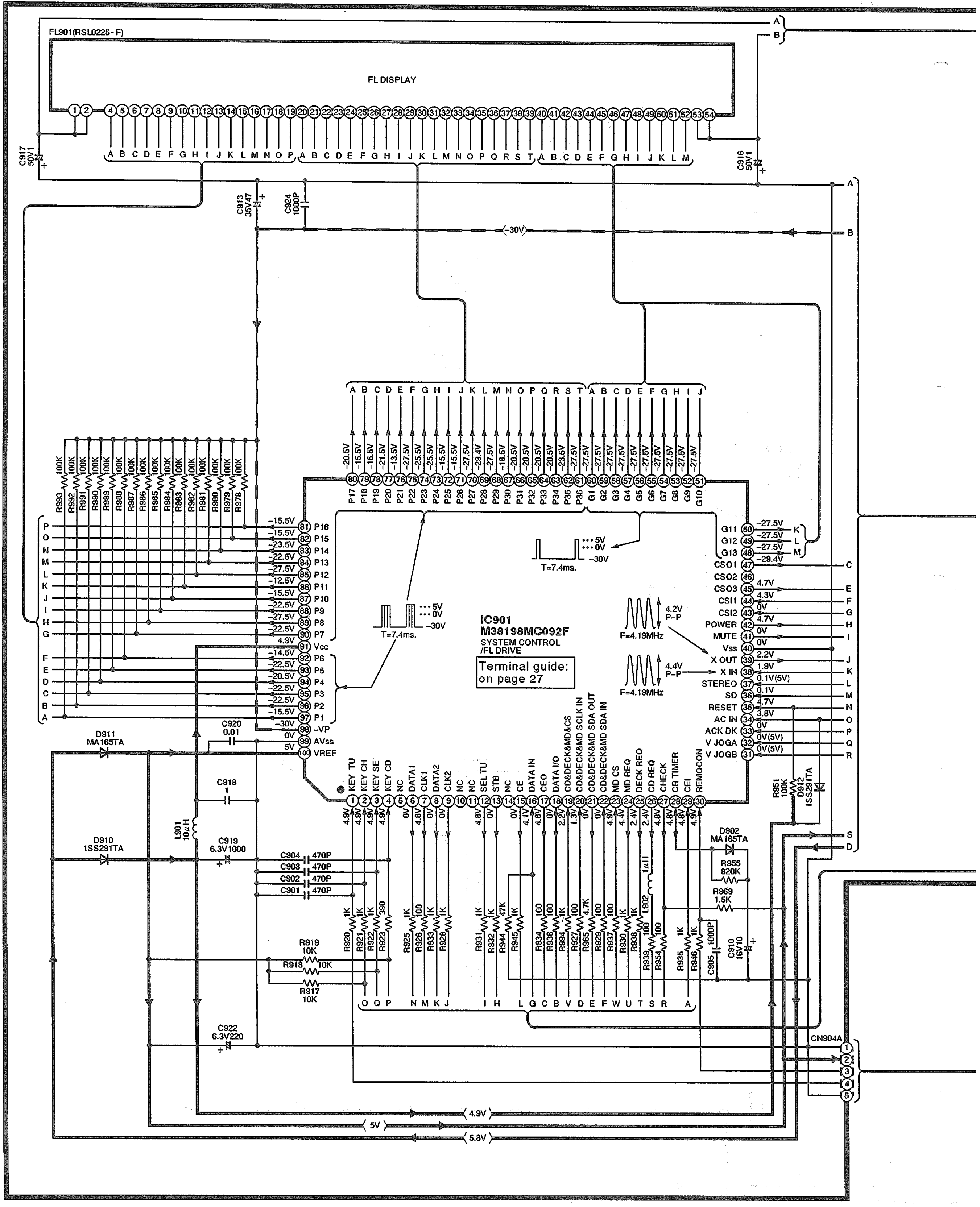

R356 390
7.4V
-7.4V
R399 1/6W2.2
C337 16V22
R345 10K
C333 220P
C339 16V10
R349 1K
C392 16V100
C394 1000P
C348 16V33
R347 10K
IC302
M62425FPE1
ELECTRONIC VOLUME
C343 16V10
R351 1.8K
R353 1.8K
R397 1/6W 2.2
C341 10V10
C335 16V10
R341 1.2K
R343 220K
FILTER
VREF
8BIT DAC2
8BIT DAC1
MICRO COMPUTER INTERFACE
POWER RESET
OUT PORT
7.2V
0V
-0.5V
-6.3V
-4.5V
-7.2V
-2.6V
7.3V
4.3V
R242 1K
C336 16V10
R342 1.2K
R344 220K
R348 10K
C334 220P
C340 16V10
C342 10V10
R350 1K
C356 0.1
R383 22K
C391 16V100
C344 47P
R355 2.2K
R354 2.2K
C345 47P
R352 1K
C393 1000P
C357 10V100
R346 10K
C338 16V22
Q309,310
2SA1309ATA
POWER SUPPLY
C355 16V33
Q310
Q309
-7V
-6.3V
D301 MA165TA
POWER SUPPLY POINT
(AC)
TP603
11V
Q601
2SD2137PQTA
REGULATOR
Q601
7.4V
8V
R601 1/4W4.7
C605 0.01
R603 1K
C603 25V1000
TP608
D606 MA719TA
D607 MA719TA
D603 RL1N4003N02
D601 RL1N4003N02
C607 10V47
D609 MA4082LTA
C608 10V47
D610 MA4082LTA
R605 100
C655 0.22
C610 0.1
R656 220
C609 1000P
D604 RL1N4003N02
D602 RL1N4003N02
TP607
-8.3V
-7.4V
C606 0.01
R604 1K
C604 25V470
-12.8V
R602 1/4W4.7
Q602
Q602
2SB1417PQTA
REGULATOR
Q605
2SD2137PQTA
REGULATOR
D632 MA165TA
5.8V
11.2V
6.4V
C613 0.01
R610 2.2K
R609 1/6W2.2
D611 RL1N4003N02
D612 RL1N4003N02
C611 0.1
D616 MA4062HTA
C614 10V47
C612 25V470
R614 6.8K
R613 6.8K
D614 MA165TA
D613 MA165TA
C954 100P
R615 10K
D615 MA4051MTA
A
B
C
D
(CT)
TP602
C602 0.022
RL601
C601 0.022
D605 MA165TA
TP601
(AC)
Q604
2SD2144STA
RELAY DRIVE
0.5V
R607 15K
R606 39K
R622 150
C955 100P
L601 1 μH
D622 MA4039MTA
R621 150
C624 35V47
C956 100P
(-37.5V)
-36.9V
R616 1/4W4.7
C616 50V47
C615 25V100
-30V
D621
D620
D619
Q606
2SB621AQRSTA
REGULATOR
C619 0.01
-30.7V
R612 4.7K
C618 100V47
C617 50V47
D618
C620 35V10
D617 MA4300MTA
D618-621 RL1N4003N02
5V

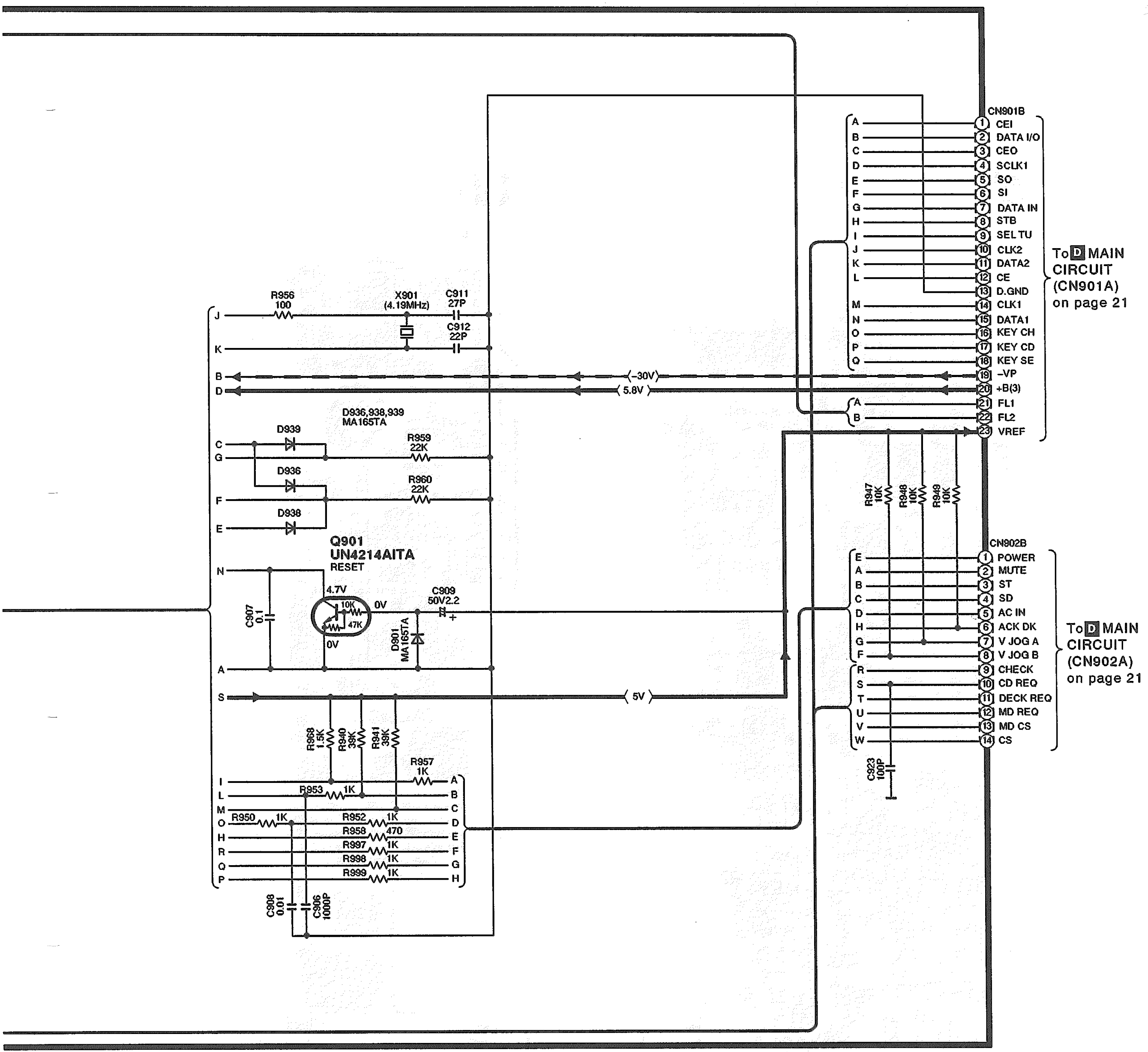
Notes: ● ⇨ : FM signal ● ⇨ : Rec out signal
● ➡ : AM signal

D MAIN CIRCUIT (P.C.Board:on page 25)

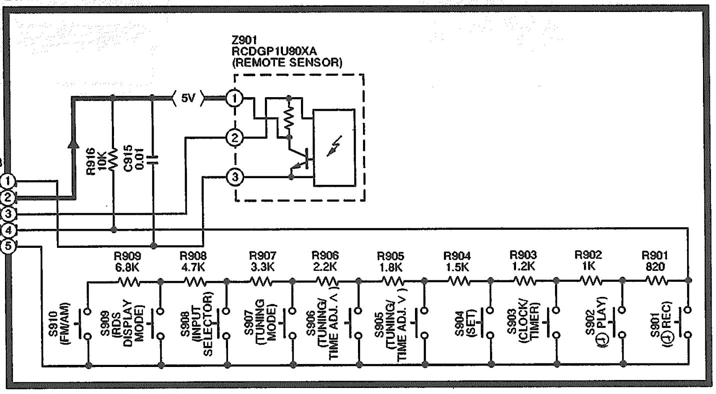

Q311,312,317,318
2SC3311ATA
MUTING
Q316,319
UN4115TA
MUTING CONT.
Q317
Q318
Q319
Q311
Q312
Q316
R377 120
R378 120
R379 22K
R380 22K
R375 1K
R376 1K
R381 1M
R382 4.7K
R357 390
R358 390
R361 22K
R362 22K
R363 1K
R364 1K
R365 1M
R366 1M
C365 6.3V47
R331 1K
C351 16V10
R372 1M
C350 6.3V47
R374 1.8K
IC204
M5218AFPE3
BUFFER AMP
R335 5.6K
C325 100P
R339 470
C327 10V47
R641 470
R333 100K
C323 1000P
R337 12K
R332 1K
C322 0.01
C352 16V10
R334 100K
R336 5.6K
C324 1000P
R338 12K
C326 100P
R340 470
C328 10V47
R642 470
C321 0.01
-3.6V
0V
0.6V
1.3V
-7.4V
7.4V
R628 4.7K
R627 4.7K
R632 470
R631 470
R624 220K
R623 220K
C631 100P
C632 100P
C633 100P
C634 100P
R630 4.7K
R629 4.7K
R636 4.7K
R635 4.7K
C635 100P
C636 100P
D651 MA165TA
D652 MA165TA
D653 MA719TA
R637 15
TP611
SHORT:
POWER"ON"
C623 10V100
5.8V
(D.GND)
TP610
C957 100P
R842 4.7K
-30V
C656 0.47
E602
C651 0.1
C652 0.1
R638 15
A.GND
C515 1000P
TP1
C514 1000P
R971 100K
R911 47K
JK601
AC1
REQ
CT
CS
AC2
DC.GND
CLK
DT
ACK DK
A.GND
REC OUT R
REC OUT L
PB IN R
A.GND
PB IN L
To CASSETTE DECK (MAIN CIRCUIT)
JK602
AC1
REQ
CT
CS
AC2
DC.GND
CLK
DT
A.GND
SEL TU
NC
T.GND
T.GND
KEY CD
VREF.GND
Rch
A.GND
A.GND
Lch
To CD CHANGER (MAIN CIRCUIT)
JK603
DIRECT
AC1
POWER
CT
VOL B
AC2
VOL A
NC
KEY SE
+B(3)
A.GND
VOCAL
SE Rch OUT
SE Lch OUT
+B(1)
-B
MUTE
D.GND
FL2
FL1
To AMPLIFIER (IN/OUT TERMINAL CIRCUIT)
CN902A
CS
MD CS
MD REQ
DECK REQ
CD REQ
CHECK
V JOG B
V JOG A
ACK DK
AC IN
SD
ST
MUTE
POWER
CN901A
VREF
FL2
FL1
+B(3)
-VP
KEY SE
KEY CD
KEY CH
DATA1
CLK1
D.GND
CE
DATA2
CLK2
SEL TU
STB
DATA OUT
SI
SO
SCLK1
CEO
DATA I/O
CEI
To E FL CIRCUIT(CN902B)
on page 23
To E FL CIRCUIT(CN901B)
on page 23

E FL CIRCUIT (P.C.Board:on page 26)


FL901(RSL0225-F)
FL DISPLAY
C917 50V1
C916 50V1
C913 35V47
C924 1000P
-30V
IC901
M38198MC092F
SYSTEM CONTROL
/FL DRIVE
Terminal guide:
on page 27
T=7.4ms.
5V
0V
-30V
4.2V P-P
F=4.19MHz
4.4V P-P
F=4.19MHz
R993 100K
R992 100K
R991 100K
R990 100K
R989 100K
R988 100K
R987 100K
R986 100K
R985 100K
R984 100K
R983 100K
R982 100K
R981 100K
R980 100K
R979 100K
R978 100K
P16
P15
P14
P13
P12
P11
P10
P9
P8
P7
Vcc
P6
P5
P4
P3
P2
P1
-VP
AVss
VREF
G11
G12
G13
CSO1
CSO2
CSO3
CSI1
CSI2
POWER
MUTE
Vss
X OUT
X IN
STEREO
SD
RESET
AC IN
ACK DK
V JOGA
V JOGB
KEY TU
KEY CH
KEY SE
KEY CD
NC
DATA1
CLK1
DATA2
CLK2
NC
NC
SEL TU
STB
NC
CE
DATA IN
CEO
DATA I/O
CD&DECK&MD&CS
CD&DECK&MD SCLK IN
CD&DECK&MD SDA OUT
CD&DECK&MD SDA IN
MD CS
MD REQ
DECK REQ
CD REQ
CHECK
CR TIMER
CEI
REMOCON
D911 MA165TA
D910 1SS291TA
C920 0.01
C918 1
L901 10μH
C919 6.3V1000
C904 470P
C903 470P
C902 470P
C901 470P
R919 10K
R918 10K
R917 10K
C922 6.3V220
D902 MA165TA
R955 820K
R969 1.5K
L902 1μH
C905 1000P
C910 16V10
R951 100K
D912 1SS291TA
CN904A
4.9V
5V
5.8V


CN901B
1 CEI
2 DATA I/O
3 CEO
4 SCLK1
5 SO
6 SI
7 DATA IN
8 STB
9 SEL TU
10 CLK2
11 DATA2
12 CE
13 D.GND
14 CLK1
15 DATA1
16 KEY CH
17 KEY CD
18 KEY SE
19 -VP
20 +B(3)
21 FL1
22 FL2
23 VREF
To D MAIN CIRCUIT (CN901A) on page 21
CN902B
1 POWER
2 MUTE
3 ST
4 SD
5 AC IN
6 ACK DK
7 V JOG A
8 V JOG B
9 CHECK
10 CD REQ
11 DECK REQ
12 MD REQ
13 MD CS
14 CS
To D MAIN CIRCUIT (CN902A) on page 21
R956 100
X901 (4.19MHz)
C911 27P
C912 22P
-30V
5.8V
D936,938,939 MA165TA
D939
D936
D938
R959 22K
R960 22K
Q901 UN4214AITA RESET
4.7V
0V
10K
47K
C909 50V2.2
C907 0.1
D901 MA165TA
5V
R968 1.5K
R940 39K
R941 39K
R957 1K
R953 1K
R950 1K
R952 1K
R958 470
R997 1K
R998 1K
R999 1K
C908 0.01
C906 1000P
R947 10K
R948 10K
R949 10K
C923 100P

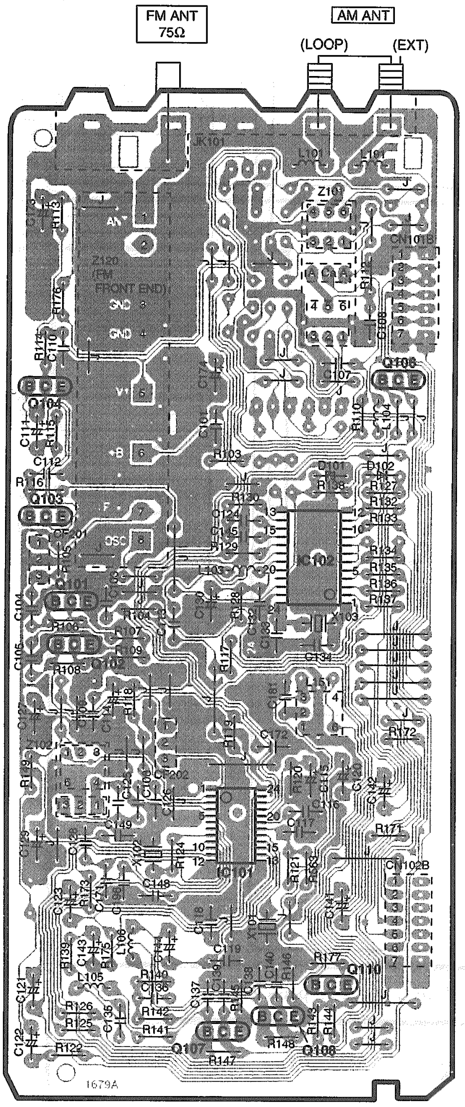
F OPERATION CIRCUIT (P.C.Board:on page 26)


Z901 RCDGP1U90XA (REMOTE SENSOR)
5V
CN904B
R916 10K
C915 0.01
R909 6.8K
R908 4.7K
R907 3.3K
R906 2.2K
R905 1.8K
R904 1.5K
R903 1.2K
R902 1K
R901 820
S910 (FM/AM)
S909 (RDS DISPLAY MODE)
S908 (INPUT SELECTOR)
S907 (TUNING MODE)
S906 (TUNING/ TIME ADJ. ∧)
S905 (TUNING/ TIME ADJ. ∨)
S904 (SET)
S903 (CLOCK/ TIMER)
S902 (⊙ PLAY)
S901 (⊙ REC)

Printed Circuit Board Diagram

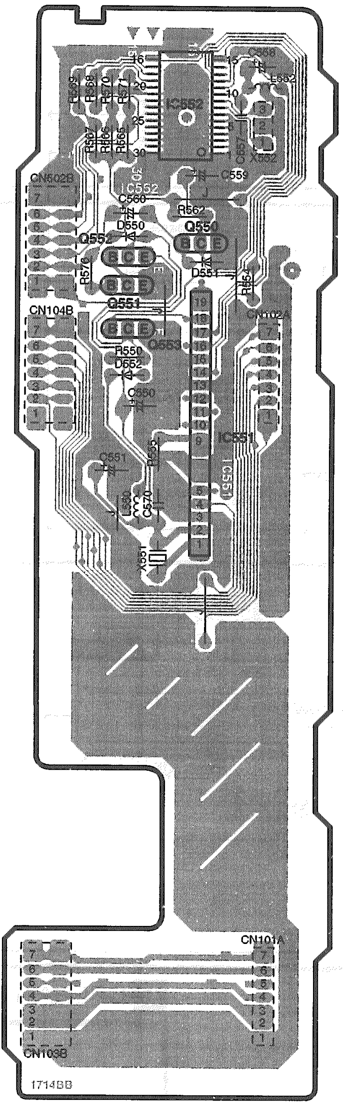
(This printed circuit board diagram may be modified at any time with the development of new technology.)

A TUNER P.C.B.


FM ANT
75Ω
AM ANT
(LOOP)
(EXT)
JK101
L101
L181
Z101
Z120
(FM FRONT END)
CN101B
Q104
Q103
Q101
Q102
Q105
Q106
Q107
Q108
Q110
IC102
IC101
X103
X102
X101
CN102B
CF201
CF202
1679A

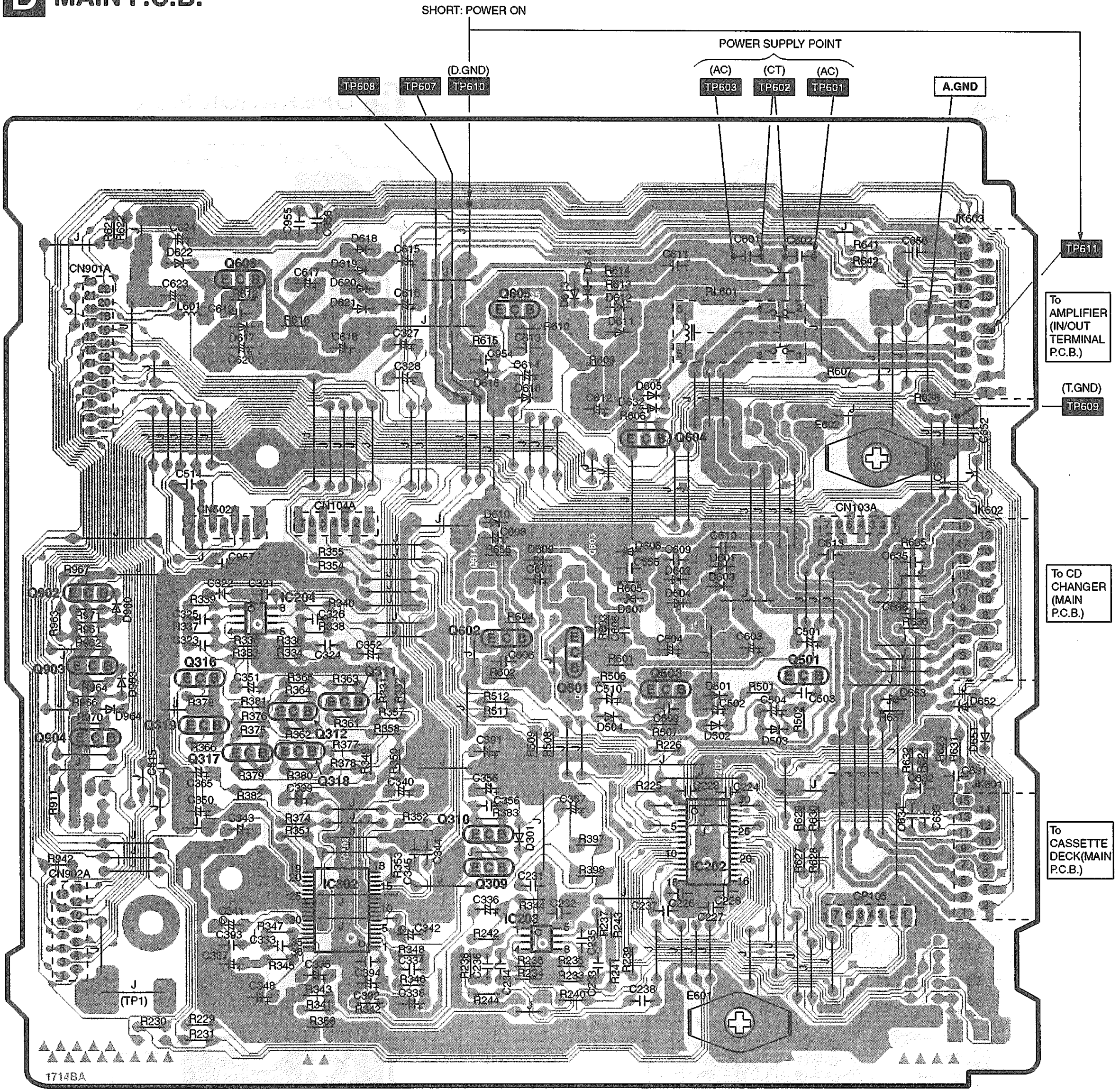
(REP2374A-T)

B RDS P.C.B.

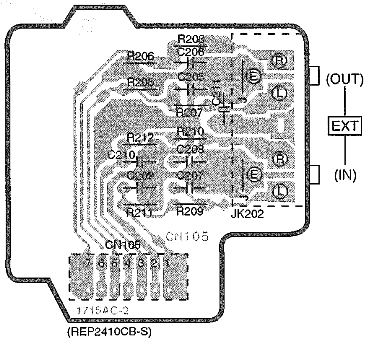

IC552
IC551
CN502B
CN104B
CN102A
CN101A
CN103B
Q550
Q551
Q552
Q553
D550
D551
D552
X551
X552
R562
R570
R550
C551
C556
C558
C559
C560
L550
171488

(REP2409B-M)

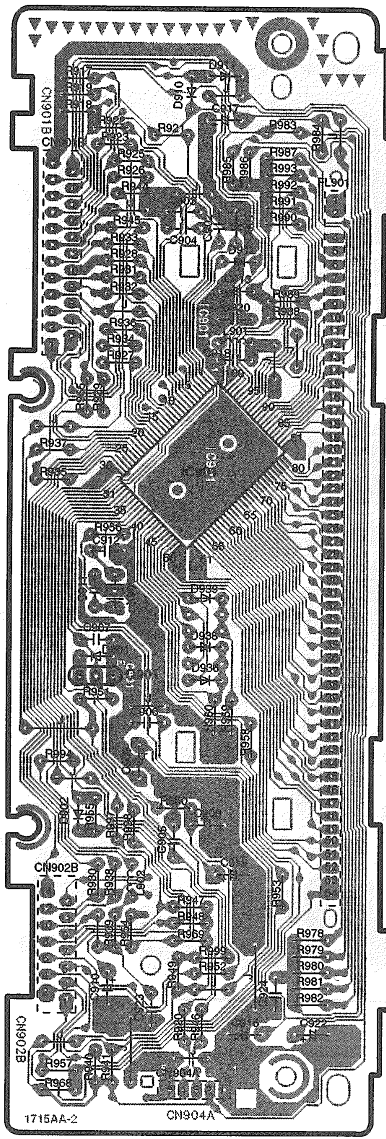
D MAIN P.C.B.


SHORT: POWER ON
POWER SUPPLY POINT
(D.GND)
(AC)
(CT)
(AC)
TP608
TP607
TP610
TP603
TP602
TP601
A.GND
TP611
To AMPLIFIER (IN/OUT TERMINAL P.C.B.)
(T.GND)
TP609
To CD CHANGER (MAIN P.C.B.)
To CASSETTE DECK(MAIN P.C.B.)
CN901A
CN902A
CN502A
CN104A
CN103A
JK603
JK602
JK601
CP105
IC302
IC202
IC204
IC208
RL601
E601
E602
(TP1)
1714BA
(REP2409B-M)

C INPUT/OUTPUT P.C.B.

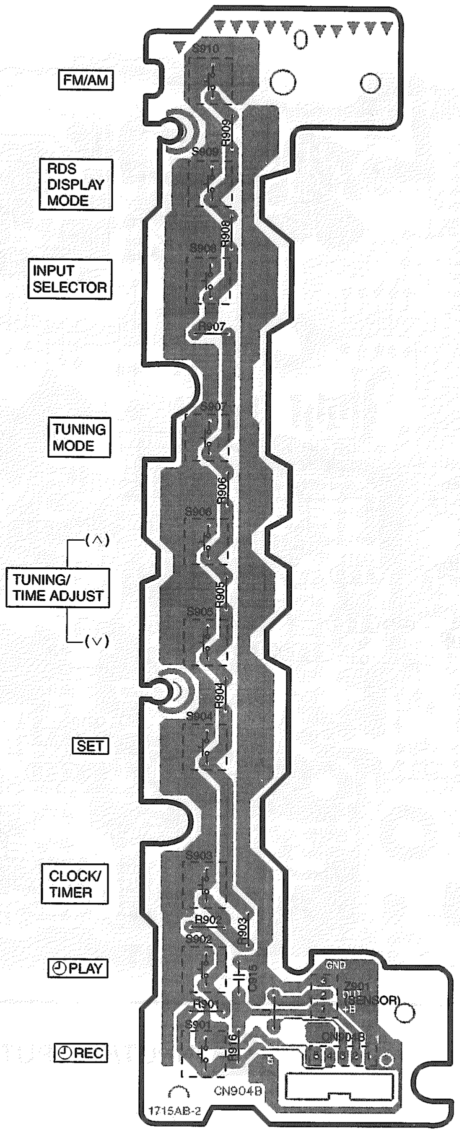

R208
C206
R206
R205
C205
C211
R207
R212
R210
C208
C210
C209
C207
R211
R209
JK202
R
E
L
(OUT)
EXT
(IN)
CN105
7 6 5 4 3 2 1
1715AC-2
(REP2410CB-S)

E FL P.C.B.


CN901B
R917
R918
D910
D911
C917
R921
R922
R923
R925
R926
R944
R945
R933
R928
R931
R932
R936
R934
R927
R937
R935
C904
R983
R984
R987
R993
R992
R991
R990
R985
R986
RL901
IC901
R956
C912
D939
D938
D936
D907
R951
R958
R950
R994
R908
CN902B
C919
R953
R948
R969
R978
R979
R980
R981
R982
R999
R952
C924
C918
C922
R957
R968
CN904A
1715AA-2

(REP2410CA-S)

F OPERATION P.C.B.


FM/AM
RDS DISPLAY MODE
INPUT SELECTOR
TUNING MODE
(∧)
TUNING/ TIME ADJUST
(∨)
SET
CLOCK/ TIMER
PLAY
REC
S910
S909
R909
S908
R908
R907
S907
S906
R906
R905
S905
R904
S904
S903
R903
R902
S902
R901
S901
C916
GND
Z901
(SENSOR)
CN904B
1715AB-2

(REP2410CA-S)

■ Terminal Function of IC's

● IC901 (M38198MC092F): SYSTEM CONTROL/ FL DRIVE

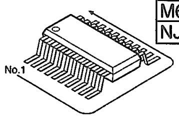
Pin No.	Mark	I/O	Function
1	KEY-TU	I	Tuner operation switch signal input
2	KEY-CH	I	Not used,open
3	KEY-SE	I	Operation switch signal input for SE-HD81
4	KEY-CD	I	Operation switch signal input for SL-HD81
5	NC	—	Not used
6	DATA1	O	Serial data output for IC102 and IC202
7	CLK1	O	Clock output for IC102, IC202 and IC552
8	DATA2	O	Serial data output for IC302
9	CLK2	O	Clock output for IC302
10	NC	—	Not used, open
11	NC	—	Not used, open
12	SEL_TU	O	Not used, open with SL-HD81
13	STB	O	Strobe signal output for IC202
14	NC	—	Not used, open
15	CE	O	Chip enable signal output for IC102
16	DATA IN	I	Data input from IC102
17	CEO	O	Serial data output for IC552
18	DATA I/O	I/O	Serial data input/output for IC552
19	CD & DECK & MD & CS	I	Serial data communication starting signal input
20	CD & DECK & MD SCLK IN	I	Serial clock input
21	CD & DECK & MD SDA OUT	O	Serial data output
22	CD & DECK & MD SDA IN	I	Serial data input
23	MD CS	—	Not used
24	MD REQ	—	Not used
25	DECK REQ	O	Request signal output for RS-HD81
26	CD REQ	O	Request signal output for SL-HD81
27	CHECK	O	Test terminal
28	CR TIMER	I/O	Capacitor and resistor oscillation terminal
29	CEI	I	Serial data input for IC552
30	REMOCON	I	Remove control signal input
31	V-JOGB	I	Volume control signal input
32	V-JOGA	I	
33	ACK DK	I	Not used, connected to GND with RS-HD81
34	AC IN	I	AC power source input terminal
35	RESET	I	Reset signal input
36	SD	I	Received signal input terminal
37	STEREO	I	Stereo signal input terminal
38	X IN	I	Connected to the ceramic oscillator (F=4.19MHz)
39	X OUT	O	
40	Vss	—	GND terminal
41	MUTE	O	Muting signal output
42	POWER	O	Power control signal output
43	CS12	I	Chip select terminal
44	CS11	I	
45 ≀ 47	CS03 ≀ CS01	O	Chip select terminal
48 ≀ 60	G13 ≀ G1	O	Grid signal output
61 ≀ 90	P36 ≀ P7	O	Segment signal output
91	Vcc	I	Power supply terminal
92 ≀ 97	P6 ≀ P1	O	Segment signal output
98	-VP	I	Negative power supply terminal
99	AVSS	—	GND terminal
100	VREF	I	Reference voltage input terminal

● IC552 (LC65104A4F75): MICROCOMPUTER

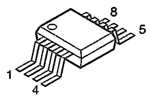
Pin No.	Mark	I/O	Function
1	PB0	—	Not used
2	PB1	—	Not used
3	PB2	—	Not used
4	PB3	—	Not used
5	AV+	—	Not used
6	AV–	—	Not used
7	VSS	—	GND terminal
8	OSC1	I	Oscillating terminal (f=4MHz)
9	OSC2	O	Oscillating terminal (f=4MHz)
10	VDD	I	+5V
11	$\overline{\text{RES}}$	I	Reset signal input
12	TEST	—	Not used
13	R. DATA	I	RDS data signal input
14	R. $\overline{\text{RES}}$	O	RDS reset signal output
15	R. CLK	I	RDS clock signal input
16	R. STRT	I	RDS start signal input
17	CEI	I	Serial data input detection terminal
18	CEO	O	Serial data output detection terminal
19	CLK	I/O	Serial clock input/output terminal
20	DATA	I/O	Serial data input/output terminal
21	PD0	—	Not used
22	PD1	—	Not used
23	PD2	—	Not used
24	PD3	—	Not used
25	PE0	—	Not used
26	PE1	—	Not used
27	SSL	—	Not used
28	PA1	—	Not used
29	PA2	—	Not used
30	PA3	—	Not used

■ Type Illustration of IC's, Transistors and Diodes

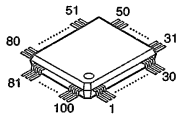
LA1832MH-TEL	24PIN
LC7218M-TE-L	24PIN
LC65104A4F75	30PIN
M62425FPE1	36PIN
NJU7313AMT2	30PIN



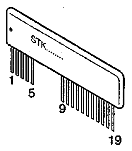
M5218AFPE3
M5219FPTA



M38198MC092F


51
50
80
31
81
30
100
1

STK311-010



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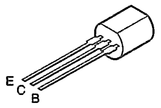

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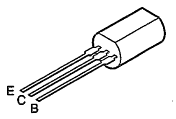

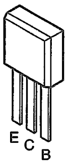

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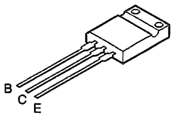

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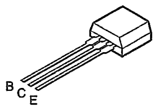

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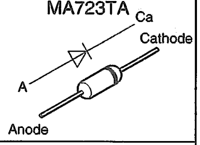
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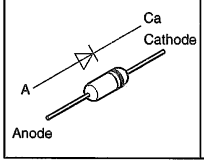
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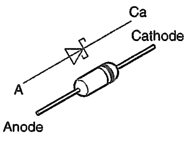
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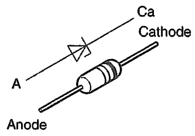
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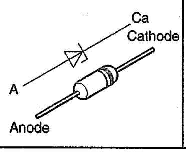
MA4039MTA
MA4051MTA
MA4062HTA
MA4082LTA

MA4150MTA
MA4300MTA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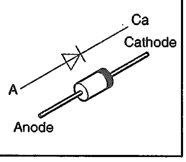

Ca
Cathode
A
Anode

■ Replacement Parts List

Notes: * Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.

* Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)

* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RGK0817-1M	SIDE PANEL(L)	1	
2	RGK0818-1M	SIDE PANEL(R)	1	
3	RHD30073-K	SCREW	4	
4	RKA0076-N	FOOT	4	
5	XTB3+8JFZ	SCREW	1	
6	REZ0883	FFC(14P)	1	
7	REZ0944	FFC(23P)	1	
8	XTB3+12JFZ	SCREW	4	
9	XTBS3+8JFZ1	SCREW	10	
10	SHE170-2	P.C.B. SUPPORT	4	
11	RGU1394A-S	BUTTON	1	
12	RMN0195	FL HOLD PIECE	2	
13	XTBS26+8J	SCREW	9	
14	RFKGTHD81E-N	FRONT PANEL ASS'Y	1	
15	RGK0819-N3	SIDE ORNEMENT(L)	1	
16	RGK0820-N3	SIDE ORNAMENT(R)	1	
C101	ECBT1C103NS5	16V 0.01U	1	
C103	ECBT1C103NS5	16V 0.01U	1	
C104,05	ECBT1H102KB5	50V 1000P	2	
C106	ECBT1C103NS5	16V 0.01U	1	
C107	ECBT1H473ZF5	50V 0.047U	1	
C108	ECBT1H8R2KC5	50V 8.2P	1	
C109,10	ECBT1C103NS5	16V 0.01U	2	
C111	ECEA1EKA4R7B	25V 4.7U	1	
C112	ECBT1C103NS5	16V 0.01U	1	
C113	ECBT1H102KB5	50V 1000P	1	
C114	RCE1HKA3R3BG	50V 3.3U	1	
C115	ECEA1EKA4R7B	25V 4.7U	1	
C116	ECBT1C822KS5	16V 8200P	1	
C117	ECQP1391JZ3	100V 390P	1	
C118,19	ECFR1C103KR	16V 0.01U	2	
C120,21	ECEA1HKA010B	50V 1U	2	
C122	ECEA1HKA2R2B	50V 2.2U	1	
C123	ECEA1HKA010B	50V 1U	1	
C124	ECBT1H102KB5	50V 1000P	1	
C125	ECBT1H150JC5	50V 15P	1	
C126	ECBT1H473ZF5	50V 0.047U	1	
C127	ECEA1CKA220B	16V 22U	1	
C128	ECBT1H102KB5	50V 1000P	1	
C129,30	ECEA0JKA101B	6.3V 100U	2	
C132	ECBT1H102KB5	50V 1000P	1	
C133,34	ECBT1H270JU5	50V 27P	2	
C135,36	ECBT1C103KS5	16V 0.01U	2	
C137,38	ECBT1H561KB5	50V 560P	2	
C139,40	ECBT1C682KR5	16V 6800P	2	
C141-44	ECEA1HKA010B	50V 1U	4	
C145	ECBT1H220JC5	50V 22P	1	
C148	ECBT1C103NS5	16V 0.01U	1	
C149	ECBT1H104ZF5	50V 0.1U	1	
C171,72	ECBT1H102KB5	50V 1000P	2	
C173	ECEA1CKA220B	16V 22U	1	
C174	RCE1CKA100BG	16V 10U	1	
C181	ECBT1H471KB5	50V 470P	1	
C196	ECBT1H102KB5	50V 1000P	1	
C205-08	ECBT1H101KB5	50V 100P	4	
C209,10	ECBT1H180J5	50V 18P	2	
C211	ECBT1H102KB5	50V 1000P	1	
C223,24	ECBT1H104ZF5	50V 0.1U	2	
C225-27	ECBT1H470J5	50V 47P	3	
C231,32	ECBT1E103ZF5	25V 0.01U	2	
C233,34	ECBT1H102KB5	50V 1000P	2	
C235,36	ECBT1H101KB5	50V 100P	2	
C237,38	ECBT1H470J5	50V 47P	2	
C321,22	ECBT1E103ZF5	25V 0.01U	2	
C323,24	ECBT1H102KB5	50V 1000P	2	
C325,26	ECBT1H101KB5	50V 100P	2	
C327,28	RCE1AKA470BG	10V 47U	2	
C333,34	ECBT1H221KB5	50V 220P	2	
C335,36	RCE1CKA100BG	16V 10U	2	
C337,38	ECEA1CKA220B	16V 22U	2	
C339,40	RCE1CKA100BG	16V 10U	2	
C341,42	ECEA1AKN100B	10V 10U	2	
C343	RCE1CKA100BG	16V 10U	1	
C344,45	ECBT1H470J5	50V 47P	2	
C348	ECEA1CKA330B	16V 33U	1	
C350	ECEA0JKA470B	6.3V 47U	1	
C351,52	RCE1CKA100BG	16V 10U	2	
C355	ECEA1CKA330B	16V 33U	1	
C356	ECBT1H104ZF5	50V 0.1U	1	
C357	RCE1AKA101BG	10V 100U	1	
C365	ECEA0JKA470B	6.3V 47U	1	
C391,92	ECEA1CKA101B	16V 100U	2	
C393,94	ECBT1H102KB5	50V 1000P	2	
C501	ECEA1EKA101B	25V 100U	1	
C502	ECA1VM101B	35V 100U	1	
C503	ECBT1E103ZF5	25V 0.01U	1	
C504	ECEA1EKA101B	25V 100U	1	
C509	ECBT1E103ZF5	25V 0.01U	1	
C510	RCE1AKA101BG	10V 100U	1	
C513-15	ECBT1H102KB5	50V 1000P	3	
C550,51	ECA0JKF101B	6.3V 100U	2	
C557	ECBT1H102KB5	50V 1000P	1	
C558	ECEA0JKA101B	6.3V 100U	1	
C559,60	ECEA1HKA010B	50V 1U	2	
C570	ECBT1H102KB5	50V 1000P	1	
C601,02	ECKR1H223ZF5	50V 0.022U	2	
⚠ C603	ECA1EM102B	25V 1000U	1	
⚠ C604	RCE1EM471BV	25V 470U	1	
C605,06	ECBT1E103ZF5	25V 0.01U	2	
C607,08	RCE1AKA470BG	10V 47U	2	
C609	ECBT1H102KB5	50V 1000P	1	
C610,11	ECBT1H104ZF5	50V 0.1U	2	
C612	RCE1EM471BV	25V 470U	1	
C613	ECBT1E103ZF5	25V 0.01U	1	
C614	RCE1AKA470BG	10V 47U	1	
C615	ECEA1EKA101B	25V 100U	1	
⚠ C616	ECA1HM470B	50V 47U	1	
⚠ C618	ECA2AM470B	100V 47U	1	
C619	ECKR1H103ZF5	50V 0.01U	1	
C620	RCE1VKA100BG	35V 10U	1	
C623	RCE1AKA101BG	10V 100U	1	
C624	ECEA1VKA470B	35V 47U	1	
C631-36	ECBT1H101KB5	50V 100P	6	
C651,52	ECBT1H104ZF5	50V 0.1U	2	
C655	ECQV1H224JM3	50V 0.22U	1	
C656	ECQV1H474JM3	50V 0.47U	1	
C901-04	ECBT1H471KB5	50V 470P	4	

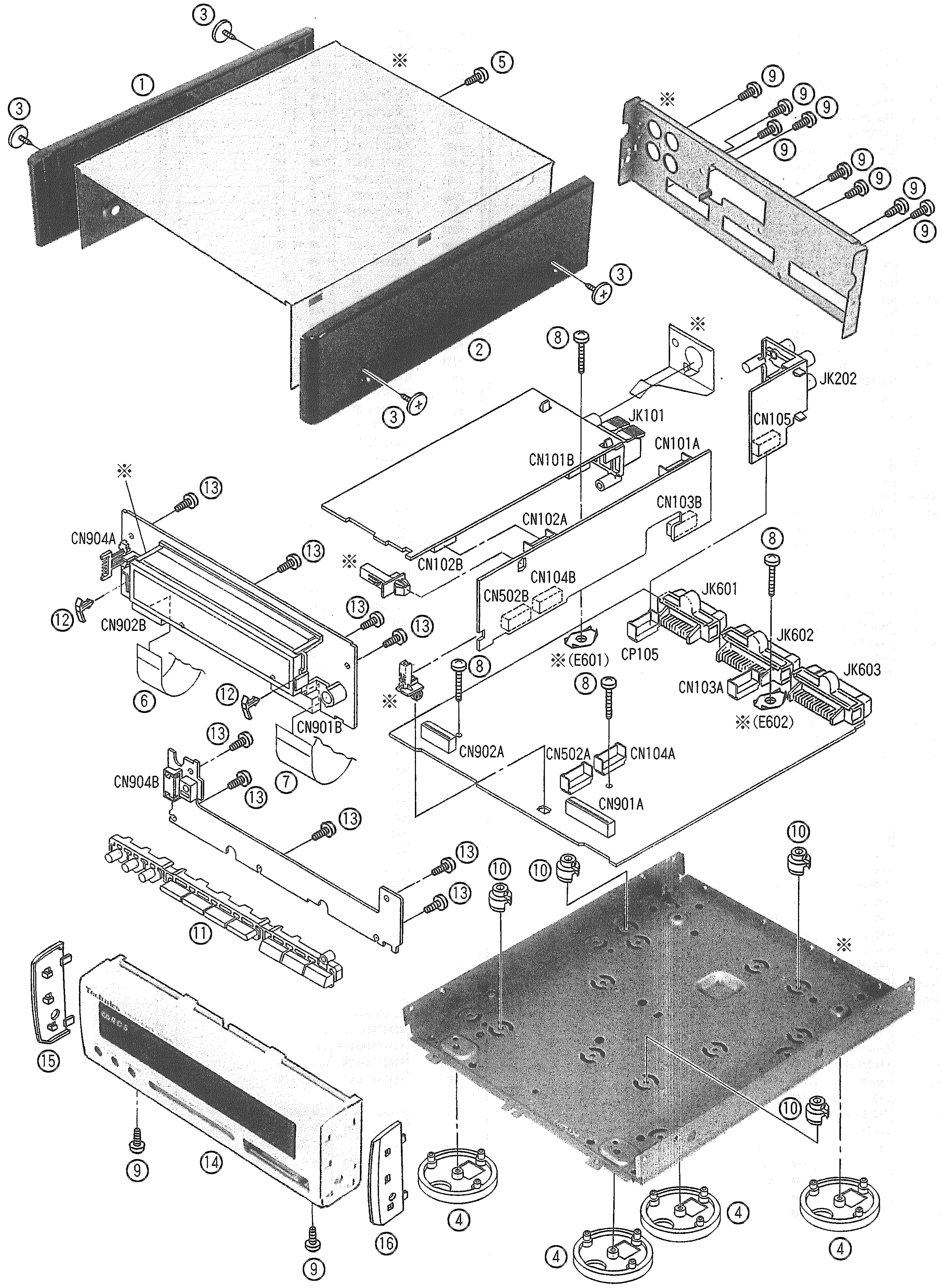
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C905,06	ECBT1H102KB5	50V 1000P	2	
C907	ECBT1H104ZF5	50V 0.1U	1	
C908	ECBT1E103ZF5	25V 0.01U	1	
C909	ECEA1HKA2R2B	50V 2.2U	1	
C910	RCE1CKA100BG	16V 10U	1	
C911	ECBT1H270JU5	50V 27P	1	
C912	ECBT1H220GC5	50V 22P	1	
C913	ECEA1VKA470B	35V 47U	1	
C915	ECBT1E103ZF5	25V 0.01U	1	
C916,17	ECEA1HKA010B	50V 1U	2	
C918	ECBT1C105ZF5	16V 1U	1	
C919	RCE0JU102BV	6.3V 1000U	1	
C920	ECBT1E103ZF5	25V 0.01U	1	
C922	ECEA0JKA221B	6.3V 220U	1	
C923	ECBT1H101KB5	50V 100P	1	
C924	ECBT1H102KB5	50V 1000P	1	
C954-57	ECBT1H101KB5	50V 100P	4	
CF201	RLFFETNGD01L	CERAMIC FILTER	1	
CF202	RLFFETMGD01L	CERAMIC FILTER	1	
CN101A	RJT057W007-1	CONNECTOR(7P)	1	
CN101B	RJU057W007	SOCKET(7P)	1	
CN102A	RJT057W007-1	CONNECTOR(7P)	1	
CN102B	RJU057W007	SOCKET(7P)	1	
CN103A	RJT057W007-1	CONNECTOR(7P)	1	
CN103B	RJU057W007	SOCKET(7P)	1	
CN104A	RJT057W007-1	CONNECTOR(7P)	1	
CN104B,05	RJU057W007	SOCKET(7P)	2	
CN502A	RJT057W007-1	CONNECTOR(7P)	1	
CN502B	RJU057W007	SOCKET(7P)	1	
CN901A	RJS1A6823	CONNECTOR(23P)	1	
CN901B	RJS1A6223-1	CONNECTOR(23P)	1	
CN902A	RJS1A6814	CONNECTOR(14P)	1	
CN902B	RJS1A6214-1	CONNECTOR(14P)	1	
CN904A	RJT066H05A	CONNECTOR(5P)	1	
CN904B	RJU066H05	SOCKET(5P)	1	
CP105	RJT057W007-1	CONNECTOR(7P)	1	
⚠ D101	MA4051MTA	DIODE	1	
D102	MA165	DIODE	1	
D301	MA165	DIODE	1	
⚠ D501,02	MA185TA	DIODE	2	
⚠ D503	MA4150MTA	DIODE	1	
⚠ D504	MA4082LTA	DIODE	1	
D550,51	MA165	DIODE	2	
D552	MA723TA	DIODE	1	
⚠ D601-04	RL1N4003N02	DIODE	4	
D605	MA165	DIODE	1	
D606,07	MA719TA	DIODE	2	
⚠ D609,10	MA4082LTA	DIODE	2	
⚠ D611,12	RL1N4003N02	DIODE	2	
⚠ D613,14	MA185TA	DIODE	2	
⚠ D615	MA4051MTA	DIODE	1	
⚠ D616	MA4062-H	DIODE	1	
⚠ D617	MA4300MTA	DIODE	1	
⚠ D618-21	RL1N4003N02	DIODE	4	
⚠ D622	MA4039MTA	DIODE	1	
D632	MA165	DIODE	1	
D651,52	MA165	DIODE	2	
D653	MA719TA	DIODE	1	
D901,02	MA165	DIODE	2	
D910	1SS291TA	DIODE	1	
D911	MA165	DIODE	1	
D912	1SS291TA	DIODE	1	
D936	MA165	DIODE	1	
D938,39	MA165	DIODE	2	
D960	MA165	DIODE	1	
D963,64	MA165	DIODE	2	
FL901	RSL0225-F	DISPLAY TUBE	1	
IC101	LA1832MH-TEL	IC	1	
IC102	LC7218M-TE-L	IC	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC202	NJU7313AMT2	IC	1	
IC203	M5219FPTA	IC	1	
IC204	M5218AFPE3	IC	1	
IC302	M62425FPE1	IC	1	
IC551	STK311-010	IC	1	
IC552	LC65104A4F75	IC	1	
IC901	M38198MC092F	IC	1	
JK101	RJH5210M	FM/AM ANT	1	
JK202	SJF3069-5N	EXT IN/OUT	1	
JK601	RJT065K15	CONNECTOR(15P)	1	
JK602	RJT065K19	CONNECTOR(19P)	1	
JK603	RJT065K20	CONNECTOR(20P)	1	
L101	ELESNR68MA	COIL	1	
L103	ELEXTR47MA9	COIL	1	
L104	ELEXT1R0KA9	COIL	1	
L105,06	ELELN822KL	COIL	2	
L151	SLM1B10M-1M	COIL	1	
L191	ELESNR68MA	COIL	1	
L550	ELEXT101KA9	COIL	1	
L552	ELEXT101KA9	COIL	1	
L601	ELEXT1R0KA9	COIL	1	
L901	RLQA100JT-Y	COIL	1	
L902	ELEXT1R0KA9	COIL	1	
Q101,02	2SC2787L	TRANSISTOR	2	
Q103,04	2SC2785FETA	TRANSISTOR	2	
Q106	UN4111	TRANSISTOR	1	
Q107,08	2SC3311ARSTA	TRANSISTOR	2	
Q110	2SC3311ARSTA	TRANSISTOR	1	
Q309,10	2SA1309ATA	TRANSISTOR	2	
Q311,12	2SC3311AR	TRANSISTOR	2	
Q316	UN4115TA	TRANSISTOR	1	
Q317,18	2SC3311AR	TRANSISTOR	2	
Q319	UN4115TA	TRANSISTOR	1	
⚠ Q501	2SC3940AQSTA	TRANSISTOR	1	
⚠ Q503	2SC3940AQSTA	TRANSISTOR	1	
Q550,51	UN4211TA	TRANSISTOR	2	
Q552	UN411FTA	TRANSISTOR	1	
Q553	UN4211TA	TRANSISTOR	1	
⚠ Q601	2SD2137PQTA	TRANSISTOR	1	
⚠ Q602	2SB1417PQTA	TRANSISTOR	1	
Q604	2SD2144STA	TRANSISTOR	1	
⚠ Q605	2SD2137PQTA	TRANSISTOR	1	
⚠ Q606	2SB621AQRSTA	TRANSISTOR	1	
Q901	UN4214TA	TRANSISTOR	1	
Q902	DTC143XSTP	TRANSISTOR	1	
Q903,04	2SC3311AR	TRANSISTOR	2	
R103	ERDS2FJ101	1/4W 100	1	
R104	ERDS2FJ103	1/4W 10K	1	
R105	ERDS2TJ471T	1/4W 470	1	
R106	ERDS2FJ474	1/4W 470K	1	
R107	ERDS2TJ331T	1/4W 330	1	
R108	ERDS2FJ474	1/4W 470K	1	
R109	ERDS2TJ331T	1/4W 330	1	
R110	ERDS2FJ102	1/4W 1K	1	
R112	ERDS2FJ104	1/4W 100K	1	
R113	ERDS2FJ103	1/4W 10K	1	
R114	ERDS2FJ562	1/4W 5.6K	1	
R115	ERDS2TJ561T	1/4W 560	1	
R116	ERDS2FJ102	1/4W 1K	1	
R117	ERDS2FJ823	1/4W 82K	1	
R118	ERDS2FJ472	1/4W 4.7K	1	
R119	ERDS2FJ103	1/4W 10K	1	
R120	ERDS2TJ473T	1/4W 47K	1	
R121	ERDS2TJ332T	1/4W 3.3K	1	
R122	ERDS2FJ272	1/4W 2.7K	1	
R124	ERDS2TJ271T	1/4W 270	1	
R125,26	ERDS2TJ152T	1/4W 1.5K	2	
R127	ERDS2FJ103	1/4W 10K	1	
R128	ERDS2TJ820T	1/4W 82	1	
R129	ERDS2TJ473T	1/4W 47K	1	
R130	ERDS2FJ103	1/4W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R132	ERDS2FJ103	1/4W 10K	1	
R133-37	ERDS2FJ102	1/4W 1K	5	
R138	ERDS2FJ103	1/4W 10K	1	
R139,40	ERDS2FJ272	1/4W 2.7K	2	
R141,42	ERDS2FJ102	1/4W 1K	2	
R143,44	ERDS2FJ222	1/4W 2.2K	2	
R145,46	ERDS2TJ821T	1/4W 820	2	
R147,48	ERDS2FJ474	1/4W 470K	2	
R149	ERDS2FJ680	1/4W 68	1	
R171,72	ERDS2FJ102	1/4W 1K	2	
R173	ERDS2TJ471T	1/4W 470	1	
R175	ERDS2FJ102	1/4W 1K	1	
R176	ERDS2TJ391T	1/4W 390	1	
R177	ERDS2FJ472	1/4W 4.7K	1	
R205,06	ERDS2FJ224	1/4W 220K	2	
R207,08	ERDS2FJ102	1/4W 1K	2	
R209-12	ERDS2TJ822T	1/4W 8.2K	4	
R225,26	ERDS2TJ122T	1/4W 1.2K	2	
R229-31	ERDS2FJ222	1/4W 2.2K	3	
R233,34	ERDS2TJ223T	1/4W 22K	2	
R235,36	ERDS2TJ822T	1/4W 8.2K	2	
R237,38	ERDS2TJ123T	1/4W 12K	2	
R239-44	ERDS2FJ102	1/4W 1K	6	
R331,32	ERDS2FJ102	1/4W 1K	2	
R333,34	ERDS2FJ104	1/4W 100K	2	
R335,36	ERDS2FJ562	1/4W 5.6K	2	
R337,38	ERDS2TJ123T	1/4W 12K	2	
R339,40	ERDS2TJ471T	1/4W 470	2	
R341,42	ERDS2TJ122T	1/4W 1.2K	2	
R343,44	ERDS2FJ224	1/4W 220K	2	
R345-48	ERDS2FJ103	1/4W 10K	4	
R349,50	ERDS2FJ102	1/4W 1K	2	
R351	ERDS2TJ182T	1/4W 1.8K	1	
R352	ERDS2FJ102	1/4W 1K	1	
R353	ERDS2TJ182T	1/4W 1.8K	1	
R354,55	ERDS2FJ222	1/4W 2.2K	2	
R356-58	ERDS2TJ391T	1/4W 390	3	
R361,62	ERDS2TJ223T	1/4W 22K	2	
R363,64	ERDS2FJ102	1/4W 1K	2	
R365,66	ERDS2FJ105	1/4W 1M	2	
R372	ERDS2FJ105	1/4W 1M	1	
R374	ERDS2TJ182T	1/4W 1.8K	1	
R375,76	ERDS2FJ102	1/4W 1K	2	
R377,78	ERDS2TJ121T	1/4W 120	2	
R379,80	ERDS2TJ223T	1/4W 22K	2	
R381	ERDS2FJ105	1/4W 1M	1	
R382	ERDS2FJ472	1/4W 4.7K	1	
R383	ERDS2TJ223T	1/4W 22K	1	
R397,98	ERQ16NKW2R2E	1/6W 2.2	2	
R501	ERDS2TJ152T	1/4W 1.5K	1	
R502	ERDS2TJ221T	1/4W 220	1	
R506	ERDS2TJ152T	1/4W 1.5K	1	
R507	ERDS2TJ221T	1/4W 220	1	
R508,09	ERDS2TJ223T	1/4W 22K	2	
R511,12	ERDS2FJ472	1/4W 4.7K	2	
R550	ERDS2FJ472	1/4W 4.7K	1	
R554	ERDS2FJ102	1/4W 1K	1	
R555	ERDS2TJ333T	1/4W 33K	1	
R562	ERDS2TJ473T	1/4W 47K	1	
R563	ERDS2TJ332T	1/4W 3.3K	1	
R565-67	ERDS2TJ332T	1/4W 3.3K	3	
R568-71	ERDS2FJ101	1/4W 100	4	
R576	ERDS2FJ102	1/4W 1K	1	
⚠ R601,02	ERD2FCJ4R7	1/4W 4.7	2	
R603,04	ERDS2FJ102	1/4W 1K	2	
R605	ERDS2FJ101	1/4W 100	1	
R606	ERDS2FJ393	1/4W 39K	1	
R607	ERDS2TJ153T	1/4W 15K	1	
⚠ R609	ERQ16NKW2R2E	1/6W 2.2	1	
R610	ERDS2FJ222	1/4W 2.2K	1	
R612	ERDS2FJ472	1/4W 4.7K	1	
R613,14	ERDS2FJ682	1/4W 6.8K	2	
R615	ERDS2FJ103	1/4W 10K	1	
⚠ R616	ERDS2FJ4R7	1/4W 4.7	1	
R621,22	ERDS2TJ151T	1/4W 150	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R623,24	ERDS2FJ224	1/4W 220K	2	
R627-30	ERDS2FJ472	1/4W 4.7K	4	
R631,32	ERDS2TJ471T	1/4W 470	2	
R635,36	ERDS2FJ472	1/4W 4.7K	2	
R637,38	ERDS2FJ150	1/4W 15	2	
R641,42	ERDS2TJ471T	1/4W 470	2	
R656	ERDS2TJ221T	1/4W 220	1	
R901	ERDS2TJ821T	1/4W 820	1	
R902	ERDS2FJ102	1/4W 1K	1	
R903	ERDS2TJ122T	1/4W 1.2K	1	
R904	ERDS2TJ152T	1/4W 1.5K	1	
R905	ERDS2TJ182T	1/4W 1.8K	1	
R906	ERDS2FJ222	1/4W 2.2K	1	
R907	ERDS2TJ332T	1/4W 3.3K	1	
R908	ERDS2FJ472	1/4W 4.7K	1	
R909	ERDS2FJ682	1/4W 6.8K	1	
R911	ERDS2TJ473T	1/4W 47K	1	
R916-19	ERDS2FJ103	1/4W 10K	4	
R920-22	ERDS2FJ102	1/4W 1K	3	
R923	ERDS2TJ391T	1/4W 390	1	
R925	ERDS2FJ102	1/4W 1K	1	
R926,27	ERDS2FJ101	1/4W 100	2	
R928	ERDS2FJ102	1/4W 1K	1	
R929	ERDS2FJ101	1/4W 100	1	
R930-33	ERDS2FJ102	1/4W 1K	4	
R934	ERDS2FJ101	1/4W 100	1	
R935	ERDS2FJ102	1/4W 1K	1	
R936,37	ERDS2FJ101	1/4W 100	2	
R938	ERDS2FJ102	1/4W 1K	1	
R939	ERDS2FJ101	1/4W 100	1	
R940,41	ERDS2FJ393	1/4W 39K	2	
R942	ERDS2FJ472	1/4W 4.7K	1	
R944	ERDS2TJ473T	1/4W 47K	1	
R945,46	ERDS2FJ102	1/4W 1K	2	
R947-49	ERDS2FJ103	1/4W 10K	3	
R950	ERDS2FJ102	1/4W 1K	1	
R951	ERDS2FJ104	1/4W 100K	1	
R952,53	ERDS2FJ102	1/4W 1K	2	
R954	ERDS2FJ101	1/4W 100	1	
R955	ERDS2TJ824T	1/4W 820K	1	
R956	ERDS2FJ101	1/4W 100	1	
R957	ERDS2FJ102	1/4W 1K	1	
R958	ERDS2TJ471T	1/4W 470	1	
R959,60	ERDS2TJ223T	1/4W 22K	2	
R961	ERDS2FJ103	1/4W 10K	1	
R962	ERDS2TJ473T	1/4W 47K	1	
R963,64	ERDS2FJ103	1/4W 10K	2	
R965	ERDS2FJ472	1/4W 4.7K	1	
R966	ERDS2TJ223T	1/4W 22K	1	
R967	ERDS2FJ472	1/4W 4.7K	1	
R968,69	ERDS2TJ152T	1/4W 1.5K	2	
R970	ERDS2TJ473T	1/4W 47K	1	
R971	ERDS2FJ104	1/4W 100K	1	
R978-93	ERDS2FJ104	1/4W 100K	16	
R994	ERDS2FJ102	1/4W 1K	1	
R997-99	ERDS2FJ102	1/4W 1K	3	
⚠ RL601	RSY0017M-0	RELAY	1	
S901-10	EVQPTD05Q	SW	10	
X101	RSXZ456KM07M	OSCILLATOR	1	
X102	RLFDGT05DD	OSCILLATOR	1	
X103	RSXC7M20S05T	OSCILLATOR	1	
X551	RSXZ456KM07M	OSCILLATOR	1	
X552	RVBCST4R00MT	OSCILLATOR	1	
X901	RSXC4M19S02T	OSCILLATOR	1	
Z101	RLA2Z002M-T	COMPONENT COMBINATION	1	
Z102	RLI2Z006M-T	COMPONENT COMBINATION	1	
Z120	RAL0019	FM FRONT END	1	
Z901	RCDGP1U90XA	REMOTE SENSOR	1	

Cabinet Parts Location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CN104B
CN502B
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※ : Not supplies.

Printed in Japan
H980206350 TN/HH

ORDER NO. PAES 980443C6

Service Manual

Speaker System

SB-HD81

Hi-Fi Speaker System

Colour

(M) . . . . . . .Wood Grain Type

■ SPECIFICATIONS

Type	2 way ,2 speaker system
Speaker	Woofer: 12 cm cone type Tweeter: 2,5 cm dome type
Impedance	6 Ω
Input power	100 W (MUSIC) 50 W(DIN)
Output sound pressure level	86 dB/W (1.0 m)
Cross over frequency	3,5 kHz
Frequency range	40Hz - 40kHz (-16 dB) 45Hz - 36kHz (-10 dB)
Dimensions (W x H x D)	200 x 336x 219 mm
Weight	4 kg

Notes :
Specifications are subject to change without notice.
Weight and dimensions are approximate.

■ ESPECIFICACIONES

Tipo	Sistema con 2 vias, 2 altavoces
Altavoces	Graves: 12 cm tipo cónico Agudos : 2,5 cm tipo cúpula
Impedancia	6 Ω
Capacidad de potencia	100 W (Músicales) 50 W(DIN)
Nivel de presión acústica de salida	86 dB/W (1.0 m)
Frecuencia de cruce	3.5 kHz
Respuesta de frecuencias	40Hz - 40kHz (-16 dB) 45Hz - 36kHz (-10 dB)
Dimensiones (W x H x D)	200 x 336 x 219 m
Peso	4 kg

Nota:
Estas especificaciones están sujetas a cualquier cambio.
Peso y dimensiones son aproximados.

■ SPECIFICATIONS

Type	2-voies , 2-haut-parleurs
Haut-parleurs	Graves: 12 cm type a cone Aguis: 2,5 cm type dome
Impédance	6 Ω
Entrée maximale	100 W (Musique) 50 W(DIN)
Niveau de pression sonore de sortie	86 dB/W (1.0 m)
Fréquence de conmutation	3,5 kHz
Gamme de fréquences	40Hz - 40kHz (-16 dB) 45Hz - 36kHz (-10 dB)
Dimensions (W x H x D)	200 x 336 x 219 mm
Poids	4 kg

Notes :
Suject à changement sans preavis.
Poids et dimensions sont aproximatifs.

⚠ WARNING

This service information is designed for experiense repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics®

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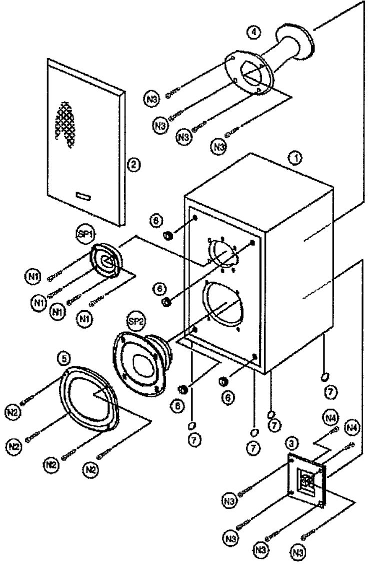
■ Replacement Parts List

Notes 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. PAES indicates parts that are suplied by PAES.

Nota 1. El código está indicado en la mayoria de las piezas. Por favor use este codigo para sus pedidos.
2. La indicación PAES significa recambios suministrados a través de PAES.

Ref. No.	Part No.	Part Name & Description	Remarks
		SPEAKER (S)	
SP1	EAS25KH330A6	SPEAKER(TWEETER)	[PAES]
SP2	EAS12PL339A6	SPEAKER(WOOFER)	[PAES]
		COIL (S)	
L1	SLCP681J	CHOQUE COIL 0,68mH	[PAES]
L2	SLCP271J	CHOQUE COIL 0,27mH	[PAES]
		CAPACITORS (S)	
C1	ECEA50YT15KE	N.P. CAPACITOR 15µF	[PAES]
C3	ECEA50YT3R9KE	N.P. CAPACITOR 3,9µF	[PAES]
		RESISTORS (S)	
R1	ERF5ZXK2R7	RESISTOR 2,7Ω 5W	[PAES]
R2	ERF5ZXK6R8	RESISTOR 6,8Ω 5W	[PAES]
		CABINET PARTS	
1	SYMPHD81	CABINET ASS´Y	[PAES]
2	SYBPHD81	NET FRAME	[PAES]
3	SWEPCA01A	TERMINAL ASS´Y	[PAES]
4	SGES8G187-1	BASS REFLEX	[PAES]
5	RGKP0848-K	ORNAMENT WOOFER	[PAES]
6	SHG8G9044	NET HOLDER BLACK	[PAES]
7	RKA8G0066-K	LEG	[PAES]
		SCREW (S)	
N1	XTNP42+20FG	SCREW TWEETER	[PAES]
N2	XTN42+20FG	SCREW WOOFER	[PAES]
N3	XTN42+20FG	SCREW B.REFLEX/B.TERM.	[PAES]
N4	XTBS42BZ+8	SCREW P.C.B.	[PAES]
		PACKING PARTS	
P1	SPGPHD81	CARTON BOX	[PAES]
P2	SPS8GBCH700	PAD	[PAES]
P3	SPH8G415	SHEET	[PAES]

■ Cabinet Parts Location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SP1
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N1
N1
N1
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SP2
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N2
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N2
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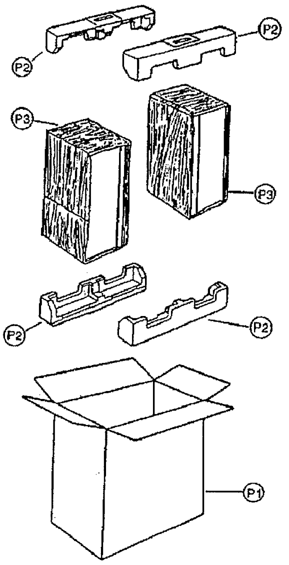
■ Packaging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P2
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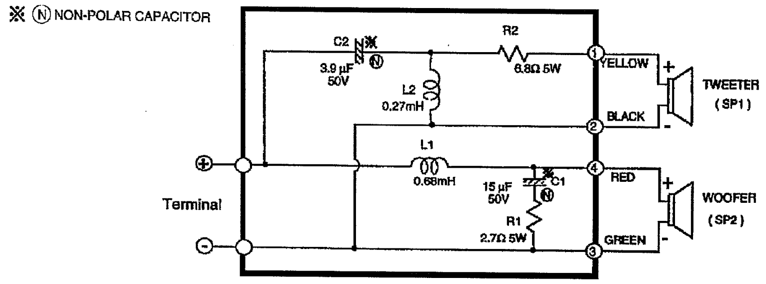
P3
P2
P2
P1

■ Schematic Diagram

This schematic diagram may be modified at any time with development of new technology.


※ Ⓝ NON-POLAR CAPACITOR
C2 ※
3.9 µF
50V
Ⓝ
R2
6.8Ω 5W
L2
0.27mH
L1
0.68mH
15 µF
50V
C1 ※
Ⓝ
R1
2.7Ω 5W
①
②
④
③
YELLOW
BLACK
RED
GREEN
+
-
TWEETER
(SP1)
+
-
WOOFER
(SP2)
⊕
Terminal
⊖

PAES

Printed in Spain
A980407000XP

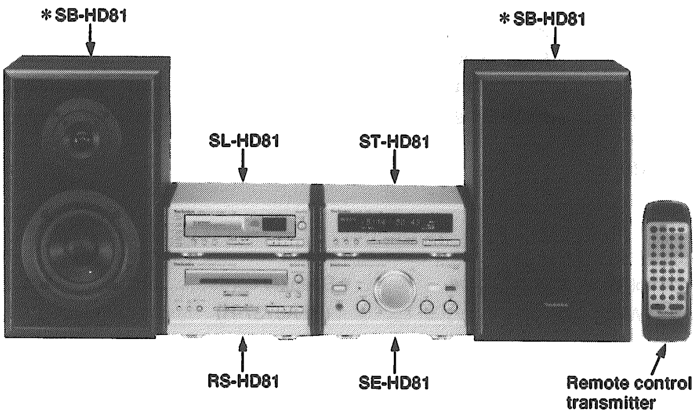
ORDER NO. AD9802028C2

Service Manual

Amplifier

Amplifier

SE-HD81



Colour

(N) .... Gold

Areas

E .... Europe.
EG .... Germany and Italy, etc.
EB .... Great Britain.
EP .... Europe and Russia.

System : SC-HD81

Because of unique interconnecting cables, when a compact requires service, send or bring in the entire system.

Specifications

Amplifier Section

Power output
  DIN 1 kHz, THD 1 %, both channel driven: 2 × 45 W (6 ohm)
  RMS 1 kHz, THD 10 %, both channel driven: 2 × 60 W (6 ohm)
Total harmonic distortion
  Rated power at 1 kHz: 1 % (6 ohm)
  Half power at 1 kHz: 0.09 % (6 ohm)
Load impedanced: 6 ohm
S/N (rated power): 90 dB

General

Power consumption: 100 W
Power supply
  [For (EB) area]: 230 — 240 V, AC 50 Hz
  [For (E, EG, EP) areas]: 230 V, AC 50 Hz
Dimensions: 196(W)/103(H)/255(D) mm
Weight: 4.1 kg

Notes:
1. Specifications are subject to change without notice.
2. Weight are dimensions are approximate.
3. Total harmonic distortion is measured by the digital spectrum analyzer.

System/SC-HD81:
Tuner: ST-HD81, Compact Disc Player: SL-HD81, **Amplifier: SE-HD81**, Cassette Deck: RS-HD81, Speaker: *SB-HD81

Notes: *...... Made in PAES

⚠WARNING

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Printed Circuit Board Diagram .... 18 ~ 20
Block Diagram 21, 22
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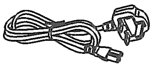
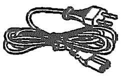
Packaging 27

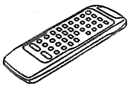
Accessories

- AC power supply cord .... 1 pc.
  For (EB) area: (RJA0053-1X)
  For (E, EG, EP) area: (RJA0019-X)



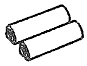


- Remote control transmitter .... 1 pc.
  (RAK-CH214WH)

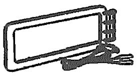


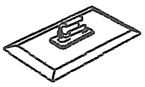
- Speaker cords .... 2 pcs.
  (RFA0737-R)

- Remote control batteries .... 2 pcs.
  [(R03/LR03 (AAA, UM-4)]
  Note: These are available on sales route.



- AM loop antenna set (RSA0021)
  AM loop antenna .... 1 pc.
  Antenna holder with stand ...... 1 pc.
  Antenna holder without stand ...... 1 pc.
  Screw .... 1 pc.





- FM indoor antenna .... 1 pc.
  (RSA0007)

- Flat cable (short) .... 1 pc.
  (REX0608)

- Flat cable (Long thick) .... 1 pc.
  (REX0812)

- Flat cable (Long thin) .... 1 pc.
  (REX0813)

- Antenna plug adaptor .... 1 pc.
  For (EB) area only:
  (SJP9009)

Before Repair and Adjustment

(1) Turn off the power supply using a 10 Ω, 10 W resistor, connect both ends of power supply capacitors (C715 ~ 718) in order to discharge the voltage.

(2) Before turning the power supply on, after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current at 50/60 Hz in NO SIGNAL mode should be shown below with respect to supply voltage 230 V/240 V.

Area	(E) (EG) (EP)		(EB)	
Power supply voltage	AC 230V		AC 240 V	
Consumed current 50/60 Hz	50 Hz	60 ~ 180 mA	50 Hz	55 ~ 175 mA
	60 Hz	48 ~ 144 mA	60 Hz	44 ~ 140 mA

Caution for AC Main Lead

[For (EB) area only.]

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark ◈ or the BSI mark ♡ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local dealer.

CAUTION!
IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:
Blue: Neutral, Brown: Live.
As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.
The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL ⏚ OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

Before use

Remove the connector cover.

How to replace the fuse

The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below.
Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.

Figure A

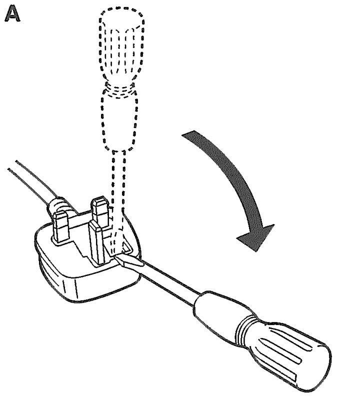
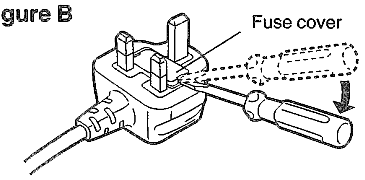


Figure B



2. Replace the fuse and close or attach the fuse cover.

Figure A

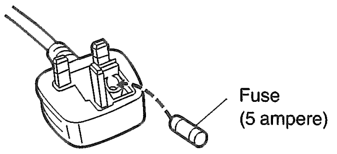
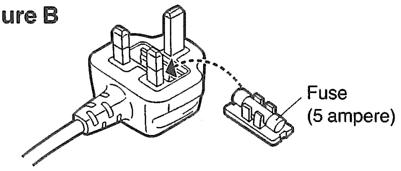


Figure B



Protection Circuitry

The protection circuitry may have operated if either of the following conditions is noticed:

*No sound is heard when the power is switched ON.

*Sound stops during a performance.

The functions of this circuitry is prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.

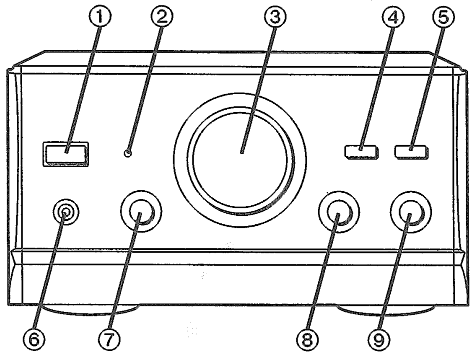
If this occurs, follow the procedure outlined below:

1. Switch OFF the power.
2. Determine the cause of the problem and correct it.
3. Switch ON the power once again.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first switched OFF and then ON again.

Location of Controls



① **Power "STANDBY ⏻/ON" switch (POWER, STANDBY ⏻/ON)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

② **Standby indicator (STANDBY)**
When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.

③ **Volume control (VOLUME)**

④ **Source direct button (SOURCE DIRECT)**

⑤ **Vocal presence button (VOCAL PRESENCE)**

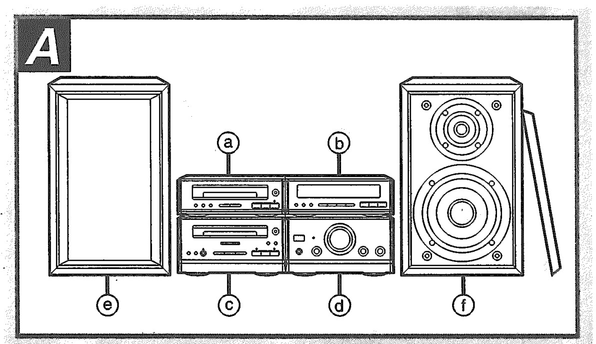
⑥ **Headphones jack (PHONES)**

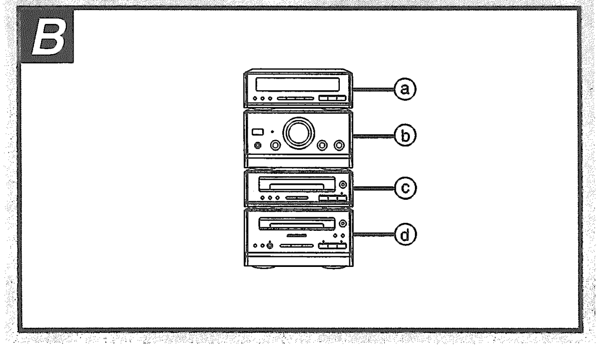
⑦ **Balance control (BALANCE)**

⑧ **Bass control (BASS)**

⑨ **Treble control (TREBLE)**

Installation





Locating the components

Side-by-side set-up A

ⓐ CD changer
ⓑ Tuner
ⓒ Cassette deck
ⓓ Amplifier
ⓔ Left speaker
ⓕ Right speaker

Stacking B

ⓐ Tuner
ⓑ Amplifier
ⓒ CD changer
ⓓ Cassette deck

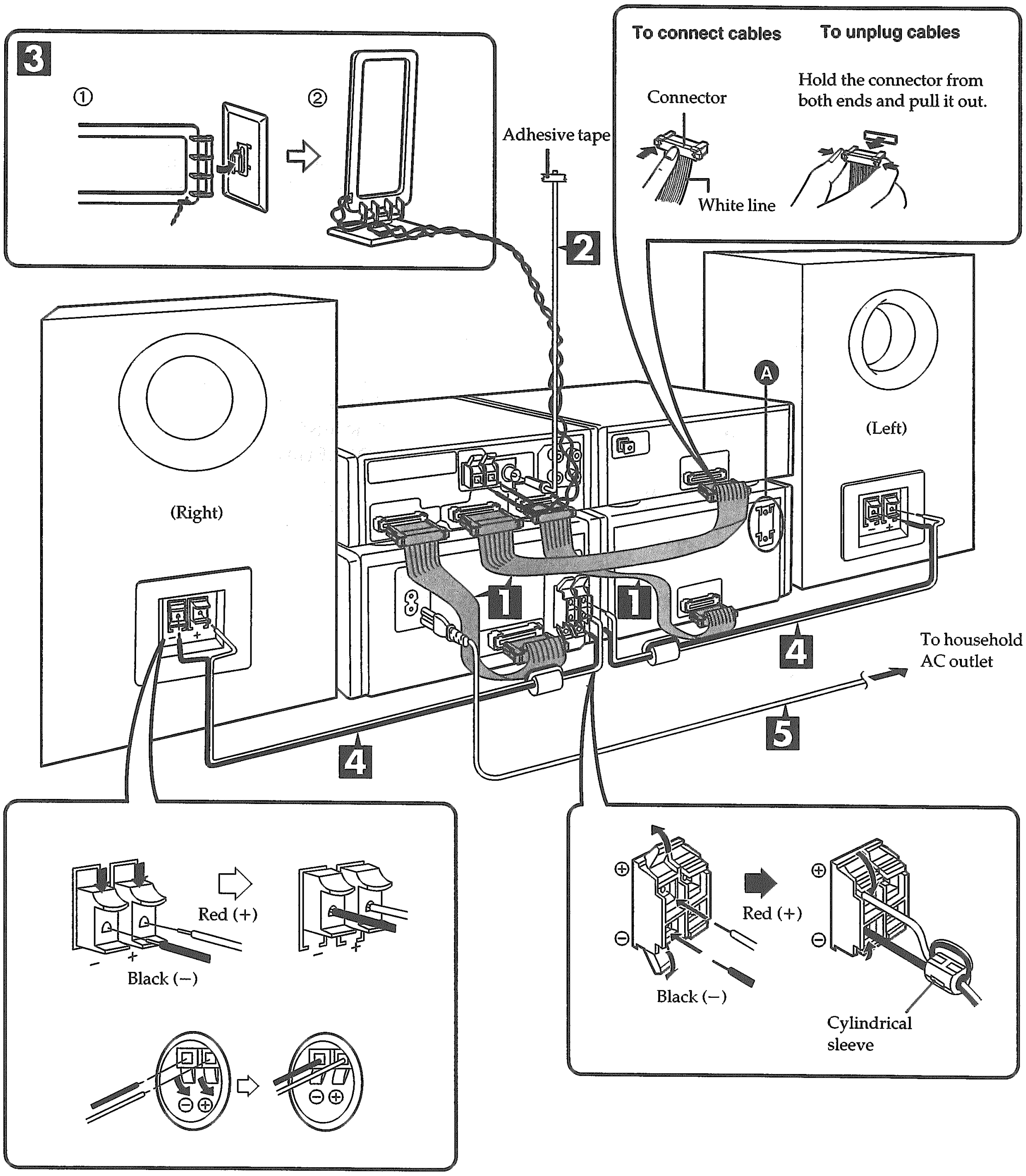
Caution
Use the speakers only with the recommended system. Failure to do so may lead to damage to the amplifier and/or the speaker, and may result in the risk of fire. Consult a qualified service person if damage has occurred or if you experience a sudden change in performance.

Note
Left and right speakers are exactly the same.

Connections

Connect the AC mains lead after you have connected all other cables.

To prepare the AM loop antenna wire and speaker cords, twist the vinyl cover tip and pull off.


3
①
②
Adhesive tape
2
To connect cables
To unplug cables
Connector
White line
A
(Right)
(Left)
1
1
4
4
5
To household AC outlet
Red (+)
Black (–)
Red (+)
Black (–)
Cylindrical sleeve

Hold the connector from both ends and pull it out.

1 Connect the flat cables.

1. Connect the short flat cable to the terminal of the A1 and A2.
2. Connect the long thick flat cable to the terminal of the B1 and B2.
3. Connect the long thin flat cable to the terminal of the C1 and C2.

Note

Do not try connecting or disconnecting the flat cables while the power is switched to ON.

After connection:

Keep cables as flat against the back of the unit as possible.

2 Connect the FM indoor antenna.

Tape the antenna to a wall or column, in a position where radio signals are received with the least amount of interference.

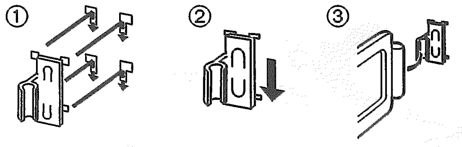
Note

When you cannot get a good reception with this FM indoor antenna, we recommend you install an FM outdoor antenna (not included).

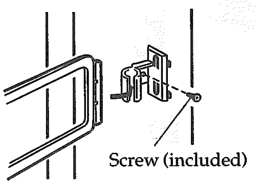
3 Connect the AM loop antenna.

You can also install the AM loop antenna on the rear of the cassette deck, wall or pillars.
In this case, be sure to use the antenna holder with the hole.

- **To install on the cassette deck rear (Ⓐ)**



- **To install on walls or pillars**



Note

To minimize noise pickup, bundle the loop antenna cord using a tape or so to keep the flat cables away from the AM loop antenna cord.

4 Connect the right (R) and left (L) front speaker cables.

Note

- For SC-HD81 connect the end of the speaker cable with the cylindrical sleeve to the amp side.
- To prevent damage to circuitry, never short-circuit positive (+) and negative (−) speaker wires.
- Be sure to connect only positive (red) wires to positive (+) terminals and negative (black) wires to negative (−) terminals.

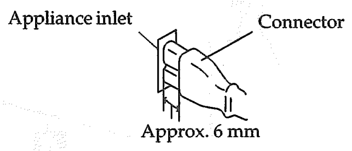
These speakers are made so as to be able to be used in close proximity to the TV, but irregular coloring may result due to how the system is placed. If such distortion occurs, turn off the TV for sometime between 15 and 30 minutes. The demagnetizing function of the TV will eliminate the distortion. If the irregular coloring is still visible, then move the speaker further away from the TV. Please note that if there is a magnetic object near the TV, irregular coloring may result due to the interaction between the TV and the speakers.

5 Connect the AC mains lead.

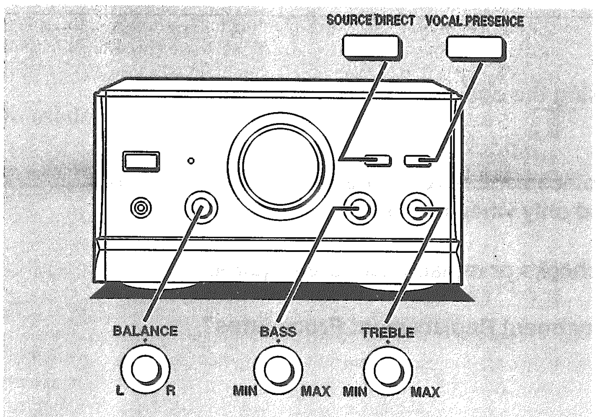
(United Kingdom only)
BE SURE TO READ THE CAUTION FOR AC MAINS LEAD ON PAGE 4 BEFORE PROCEEDING TO STEP 5.

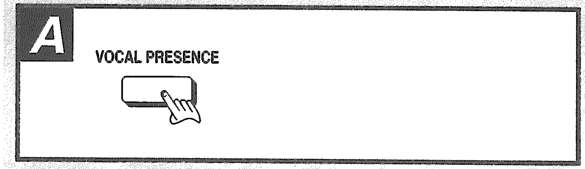
Insertion of Connector

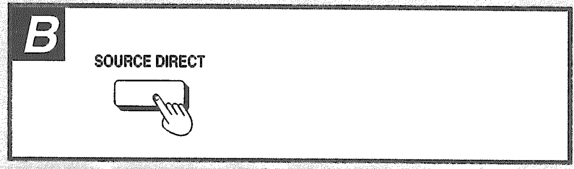
Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.
However there is no problem using the unit.

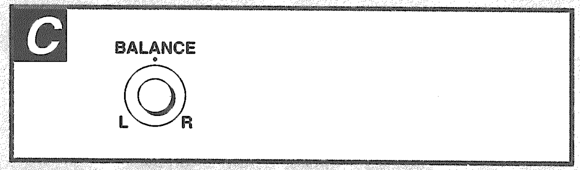


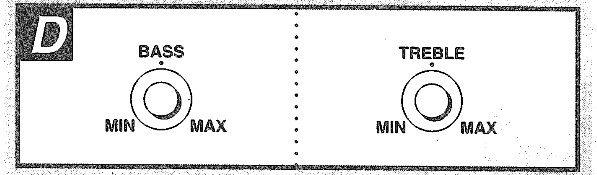
■ Changing the Tone

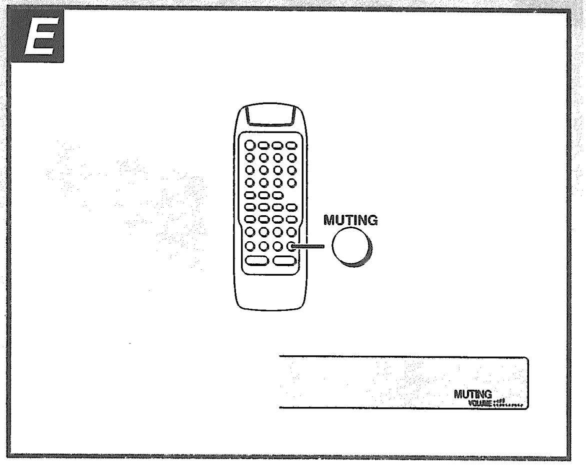

SOURCE DIRECT
VOCAL PRESENCE
BALANCE
BASS
TREBLE
L
R
MIN
MAX
MIN
MAX


A
VOCAL PRESENCE


B
SOURCE DIRECT


C
BALANCE
L
R


D
BASS
MIN
MAX
TREBLE
MIN
MAX


E
MUTING
MUTING
VOLUME

Listening with Vocal Presence A

Press VOCAL PRESENCE.

The button will light up. Vocal Presence accentuates midrange sounds to make voices stand out. (Vocal Presence cannot be used at the same time as SOURCE DIRECT.)

To cancel

Press VOCAL PRESENCE again.

For clearer sound B

Press SOURCE DIRECT.

The button will light up. Voice signals will not be fed through the tone control circuit, so you get a clearer sound. (You cannot adjust BASS or TREBLE when using SOURCE DIRECT.)

To cancel

Press SOURCE DIRECT again.

To adjust the sound balance C

Turn BALANCE to adjust the left/right sound balance.

Note

The effect works only with playback. It cannot be used in recording.

To adjust the tone quality D

Turn BASS to adjust the low-frequency sound.

Turn TREBLE to adjust the high-frequency sound.

Note

The effect works only with playback. It cannot be used in recording.

■ Convenient Functions

To mute the volume E

This feature is convenient when you have a telephone call, etc.

by remote control only

Press MUTING.

"MUTING" will light.

To cancel, press MUTING once again. ("MUTING" goes out.)

To cancel from the amplifier, reduce the volume level to the minimum position (-- dB) and then reset to the desired volume.
Muting is also canceled if you turn OFF the system.

Operation Checks and Main Component Replacement Procedures

NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.

• Contents

•Checking Procedures for each P.C.B. Page.

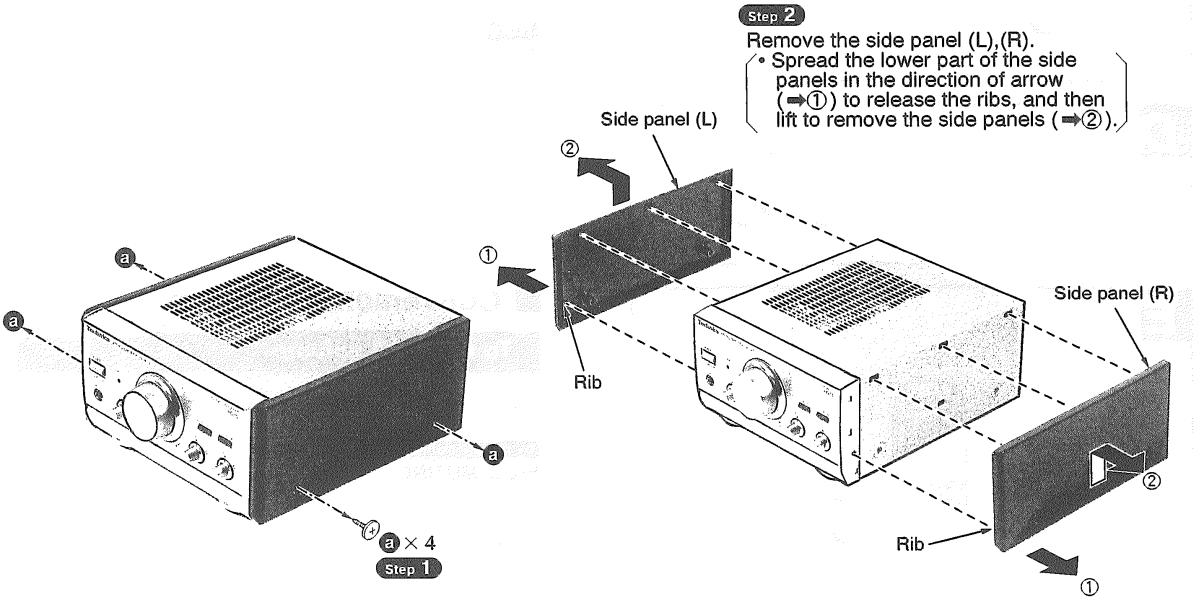
1. Checking for the operation P.C.B.. •• 8.
2. Checking for the PDM P.C.B.. •• 9.

•Main Component Replacement Procedures

1. Replacement for the regulator transistor. ••10.

Checking Procedure for each P.C.B.

1. Checking for the operation P.C.B.



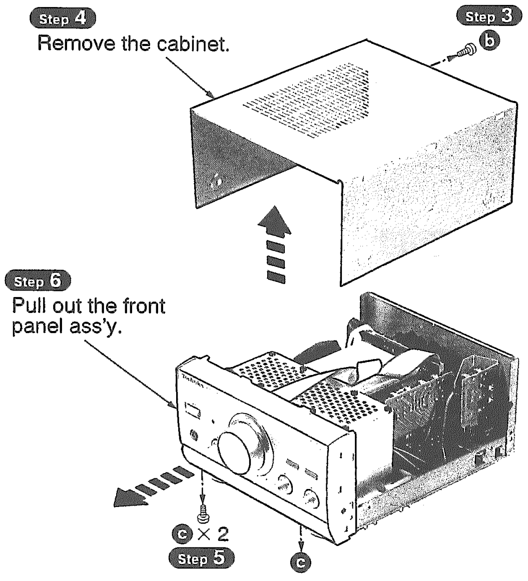
Step 2

Remove the side panel (L),(R).

• Spread the lower part of the side panels in the direction of arrow (➡①) to release the ribs, and then lift to remove the side panels (➡②).

Ⓐ × 4

Step 1

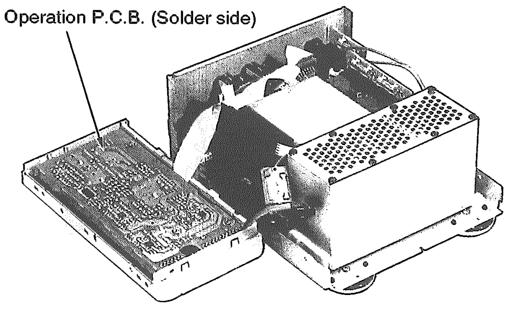

Step 4 Remove the cabinet.

Step 3

Step 6 Pull out the front panel ass'y.

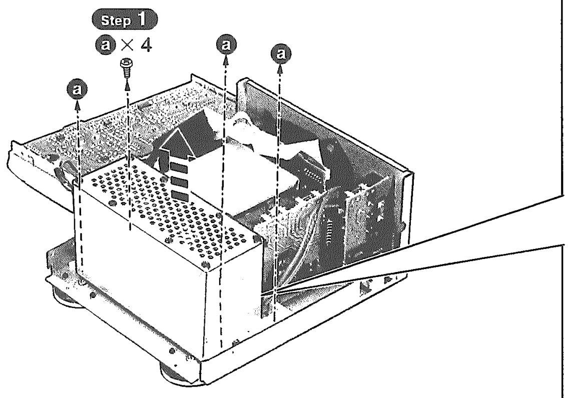
Step 5

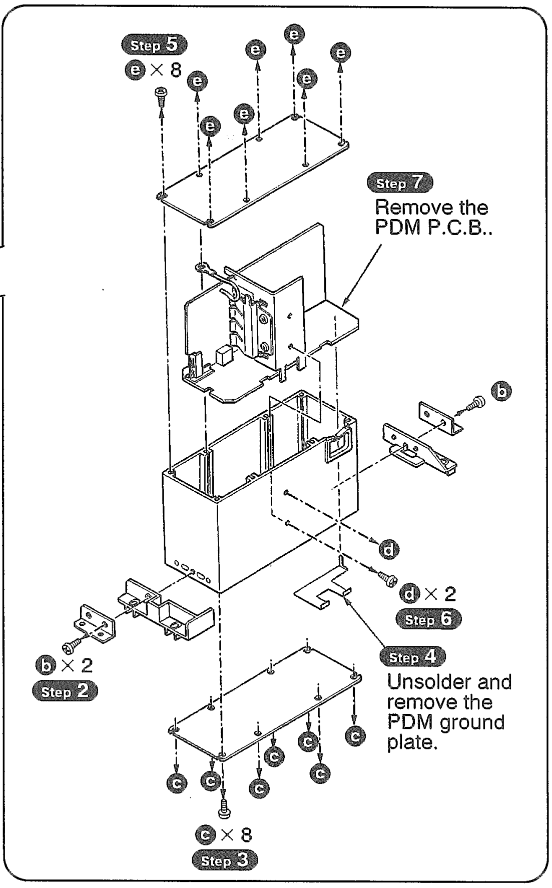
- **Check the operation P.C.B. as shown below.**


Operation P.C.B. (Solder side)

2. Checking for the PDM P.C.B.

- Follow Step 1 ~ Step 6 in item 1 on pages 8 and 9.


Step 1


Step 5

Step 7 Remove the PDM P.C.B..

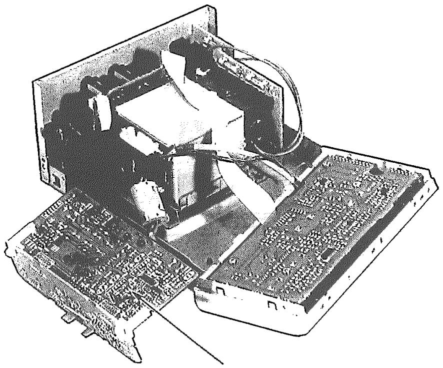
Step 6

Step 2

Step 4 Unsolder and remove the PDM ground plate.

Step 3

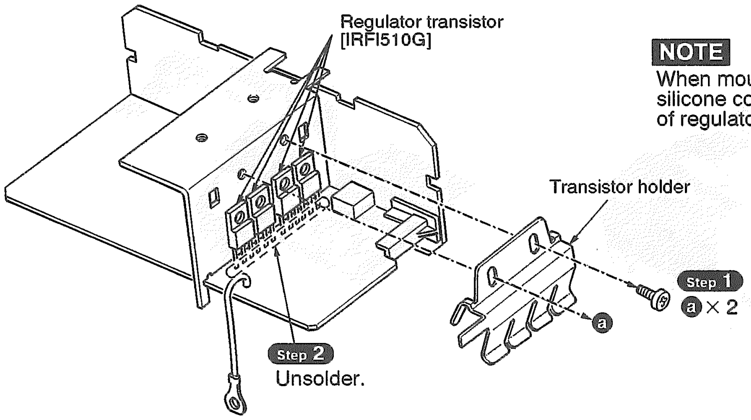
- **Check the PDM P.C.B. as shown below.**



Main Component Replacement Procedures

1. Replacement for the regulator transistor

- Follow Step 1 ~ Step 6 in item 1 on pages 8 and 9.
- Follow Step 1 ~ Step 7 in item 2 on page 9.


Regulator transistor [IRFI510G]

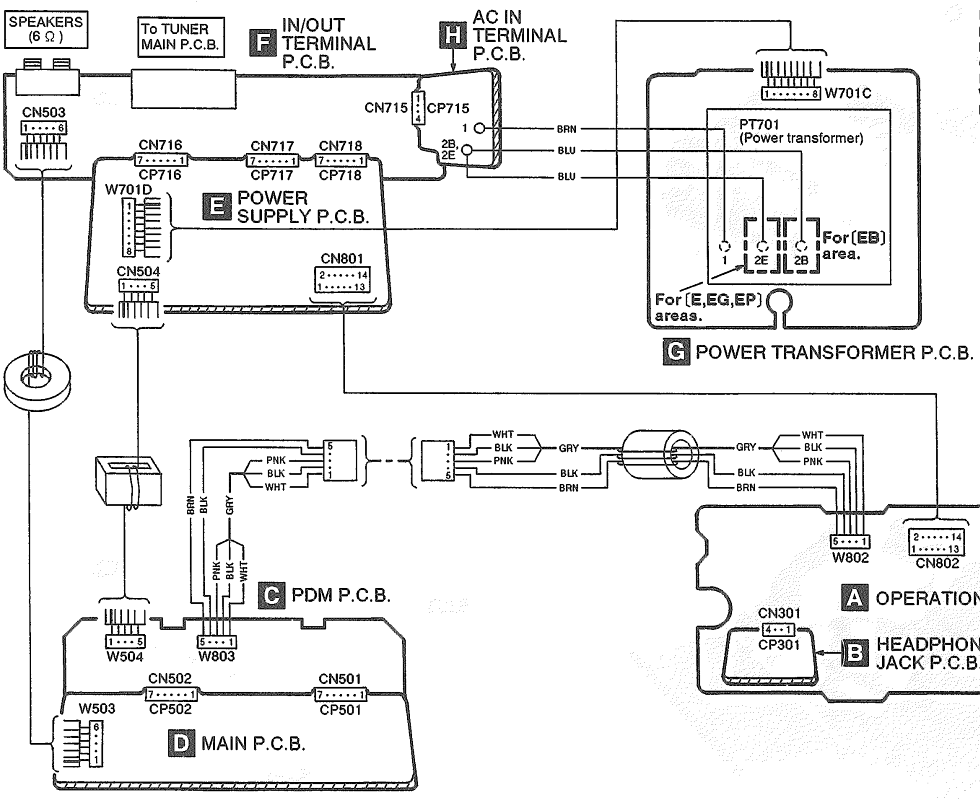
Transistor holder

Step 1 ⓐ × 2

Step 2 Unsolder.

NOTE
When mounting the regulator transistor, apply silicone compound (RFKX0002) to the rear side of regulator transistor.

Wiring Connection Diagram

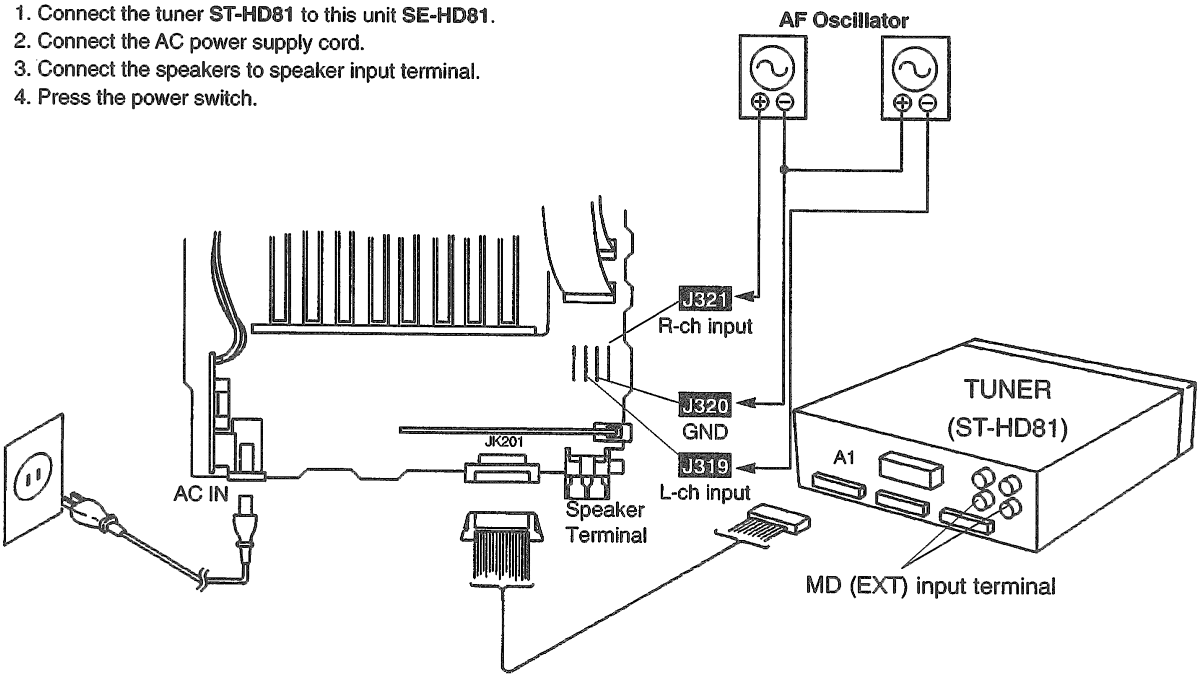

SPEAKERS (6 Ω)
To TUNER MAIN P.C.B.
F IN/OUT TERMINAL P.C.B.
H AC IN TERMINAL P.C.B.
CN503
CN715
CP715
1
2B, 2E
BRN
BLU
BLU
CN716
CP716
CN717
CP717
CN718
CP718
W701D
E POWER SUPPLY P.C.B.
CN504
CN801
W701C
PT701 (Power transformer)
1
2E
2B
For [EB] area.
For [E,EG,EP] areas.
G POWER TRANSFORMER P.C.B.
WHT
BLK
PNK
GRY
BRN
W802
CN802
A OPERATION P.C.B.
CN301
CP301
B HEADPHONES JACK P.C.B.
C PDM P.C.B.
W504
W803
CN502
CP502
CN501
CP501
W503
D MAIN P.C.B.

NOTE:
BLK ···· Black
BRN ···· Brown
GRY ···· Gray
PNK ···· Pink
WHT ···· White
BLU ···· Blue

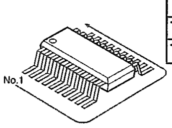
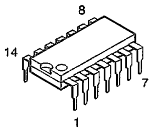
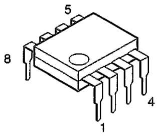
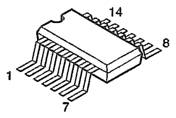
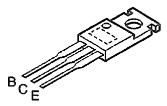
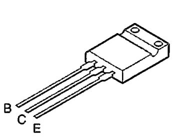
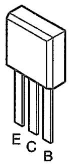
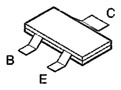
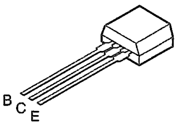
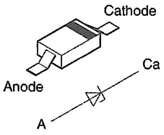
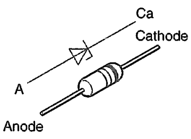
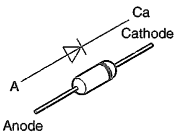
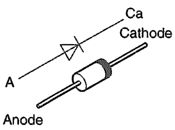
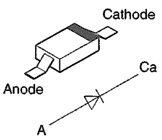
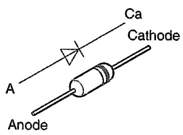
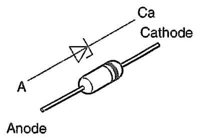
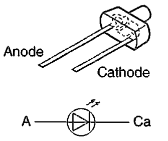
■ To Supply Power Source

This unit SE-HD81 is not operate normary without connecting the unit ST-HD81.
When operate the unit SE-HD81, be sure to connect the unit ST-HD81 with included connection cable.

1. Connect the tuner **ST-HD81** to this unit **SE-HD81**.
2. Connect the AC power supply cord.
3. Connect the speakers to speaker input terminal.
4. Press the power switch.


AF Oscillator
J321
R-ch input
J320
GND
J319
L-ch input
JK201
Speaker
Terminal
AC IN
TUNER
(ST-HD81)
A1
MD (EXT) input terminal

■ Type Illustration of ICs, Transistors and Diodes

M5218AFPE3 8PIN M5219FPTA 8PIN TC7WU04FT12L 8PIN TC7W08FTE12L 8PIN TC9215AFEL 16PIN 	IR2112 	NJM2114D 	TC74HC00AFT1 TC74HC74AFEL 	IRFI510G 
2SD2137PQTA 	 2SC3312RSTA 2SC3311AIRTA UN4111AITA UN4115TA	2SB1218ARTX 2SB792RSTTX 2SD1819ARTX 	2SD2144STA 	MA8033LTX  Cathode Ca Anode A
MA4051MTA  Ca Cathode A Anode	MA165TA  Ca Cathode A Anode	 Ca Cathode A Anode 1N5402BF RL1N4003N02 D1NL20U-4084	MA111TX  Cathode Anode Ca A	MA185TA  Ca Cathode A Anode
 Ca Cathode A Anode MA4120HTA MA4150HTA MA4240MTA MA4300MTA	LNJ201LPQJA LNJ301MPUJAD  Anode Cathode A Ca			

■ Schematic Diagram (See parts list on pages 23 ~ 25.)

Page
A OPERATION CIRCUIT 13, 14
B HEADPHONES JACK CIRCUIT 13
C PDM CIRCUIT 14
D MAIN CIRCUIT 15, 16
E POWER SUPPLY CIRCUIT 17
F INPUT/OUTPUT TERMINAL CIRCUIT 17
G POWER TRANSFORMER CIRCUIT 17
H AC IN TERMINAL CIRCUIT 17

- **This schematic diagram may be modified at any time with the development of new technology.**

Notes:

- **S801** : Power "STANDBY ⏻ /ON" switch (POWER, STANDBY ⏻ /ON)
- **S802** : Source direct switch (SOURCE DIRECT)
- **S803** : Vocal presence switch (VOCAL PRESENCE)

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
  No mark: Power ON

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

- **Caution!**
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

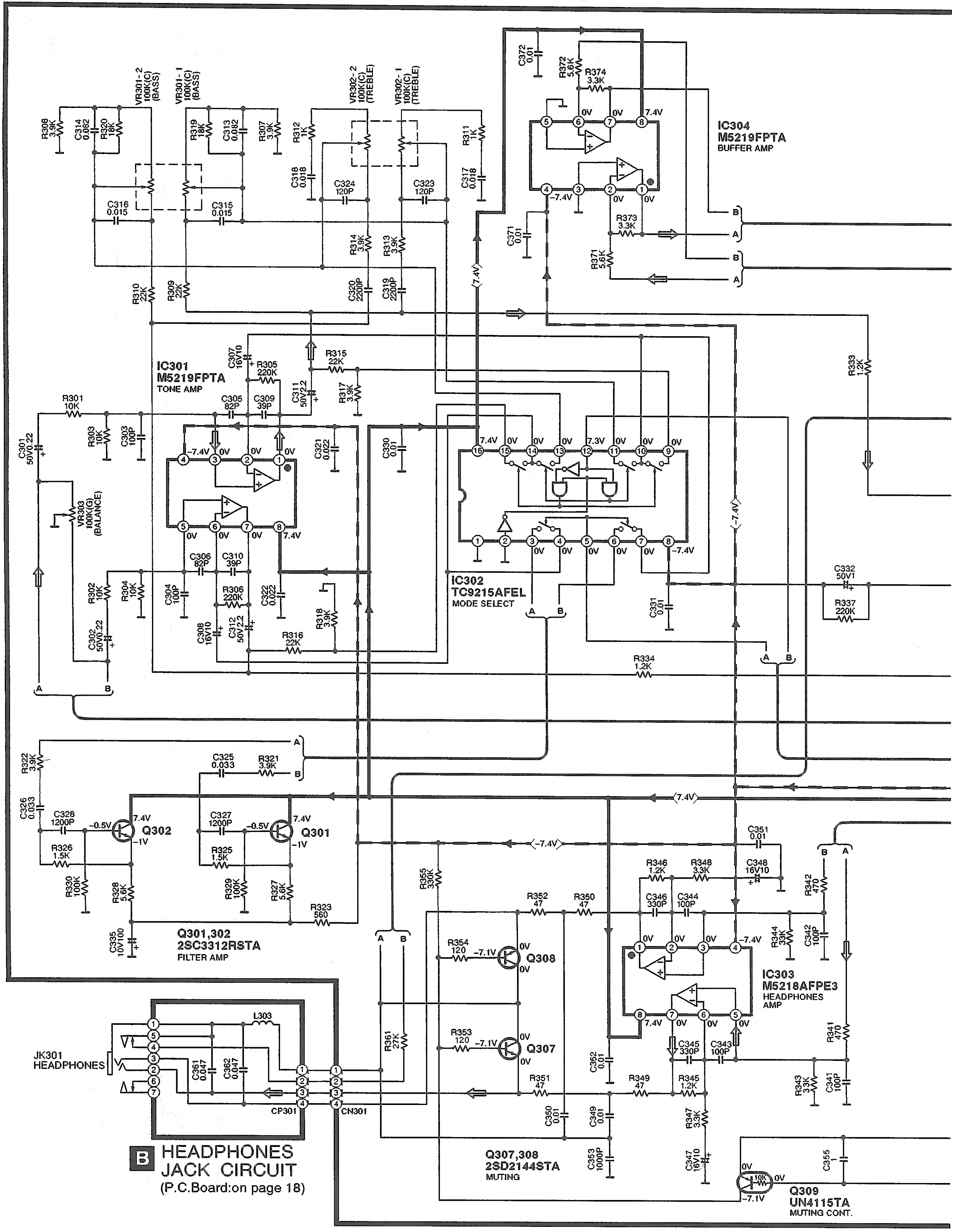
- **Voltage and signal line**

━━━▶━━━ : Positive voltage line

■■■■▶■■■■ : Positive voltage line

⇨ : Source signal line

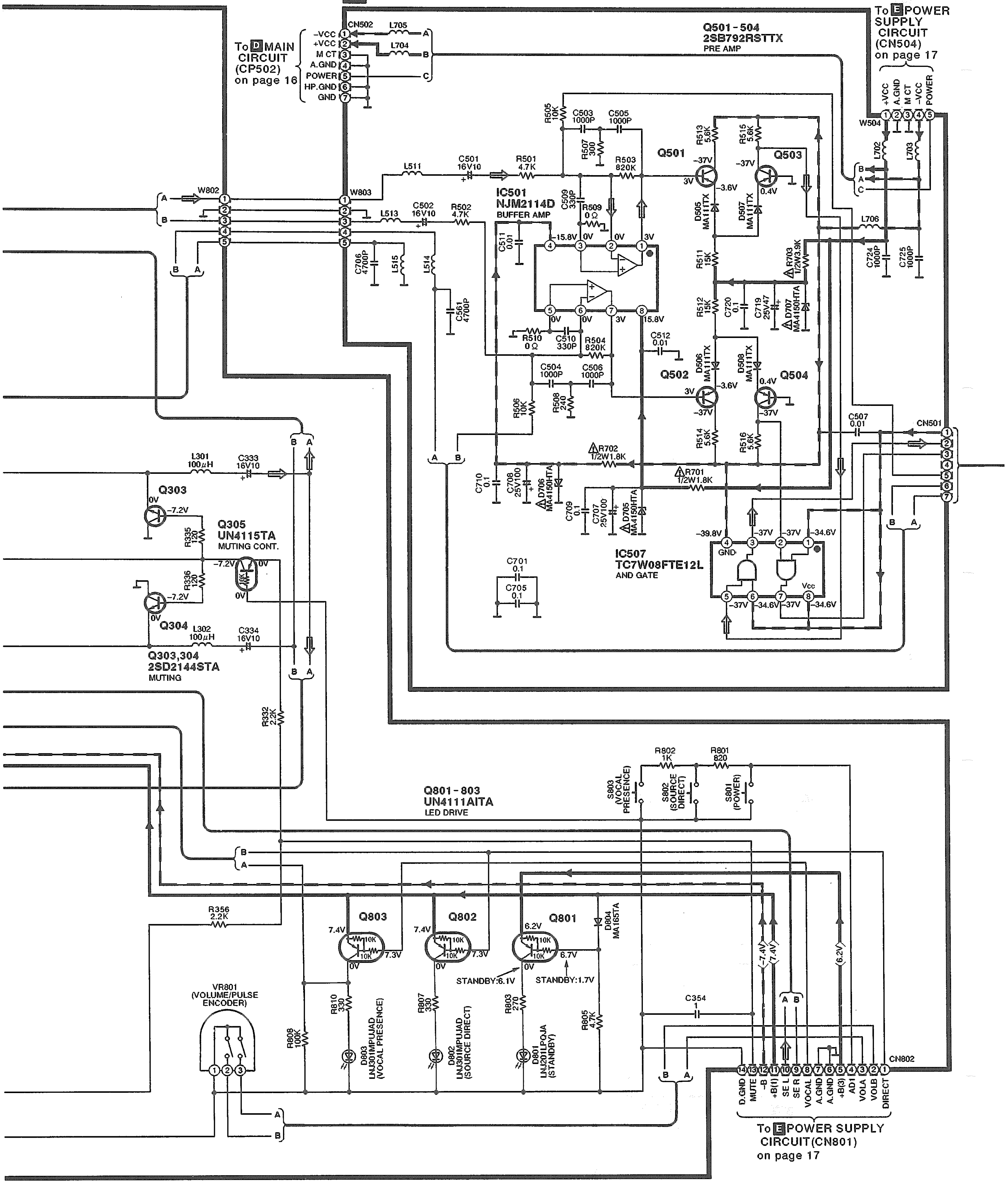
A OPERATION CIRCUIT (P.C.Board:on page 18)


VR301-2 100K(C) (BASS)
VR301-1 100K(C) (BASS)
VR302-2 100K(C) (TREBLE)
VR302-1 100K(C) (TREBLE)
R308 3.9K
C314 0.082
R320 18K
R319 18K
C313 0.082
R307 3.9K
R312 1K
R311 1K
C318 0.018
C317 0.018
C324 120P
C323 120P
C316 0.015
C315 0.015
R314 3.9K
R313 3.9K
R310 22K
R309 22K
C320 2200P
C319 2200P
C372 0.01
R372 5.6K
R374 3.3K
IC304
M5219FPTA
BUFFER AMP
7.4V
0V
-7.4V
C371 0.01
R373 3.3K
R371 5.6K
(7.4V)
B
A
IC301
M5219FPTA
TONE AMP
C307 16V10
R305 220K
R315 22K
C311 50V2.2
R317 3.9K
R301 10K
C305 82P
C309 39P
C301 50V0.22
R303 10K
C303 100P
C321 0.022
C330 0.01
VR303 100K(G) (BALANCE)
C306 82P
C310 39P
R302 10K
R304 10K
C304 100P
R306 220K
C322 0.022
R318 3.9K
C302 50V0.22
C308 16V10
C312 50V2.2
R316 22K
IC302
TC9215AFEL
MODE SELECT
7.3V
R333 12K
C332 50V1
R337 220K
C331 0.01
R334 1.2K
(-7.4V)
R322 3.9K
C325 0.033
R321 3.9K
C326 0.033
C328 1200P
-0.5V
Q302
-1V
C327 1200P
Q301
R326 1.5K
R325 1.5K
R330 100K
R328 5.6K
R329 100K
R327 5.6K
R323 560
C335 10V100
Q301,302
2SC3312RSTA
FILTER AMP
(7.4V)
C351 0.01
R355 330K
R346 1.2K
R348 3.3K
C348 16V10
R342 470
R352 47
R350 47
C346 330P
C344 100P
R354 120
-7.1V
Q308
R344 33K
C342 100P
IC303
M5218AFPE3
HEADPHONES AMP
R353 120
Q307
R361 27K
C345 330P
C343 100P
R341 470
C352 0.01
R351 47
R349 47
R345 1.2K
R343 33K
C341 100P
C350 0.01
C349 0.01
R347 3.3K
Q307,308
2SD2144STA
MUTING
C353 1000P
C347 16V10
C355 1
10K
Q309
UN4115TA
MUTING CONT.
L303
JK301
HEADPHONES
C361 0.047
C362 0.047
CP301
CN301

B HEADPHONES JACK CIRCUIT

(P.C.Board:on page 18)

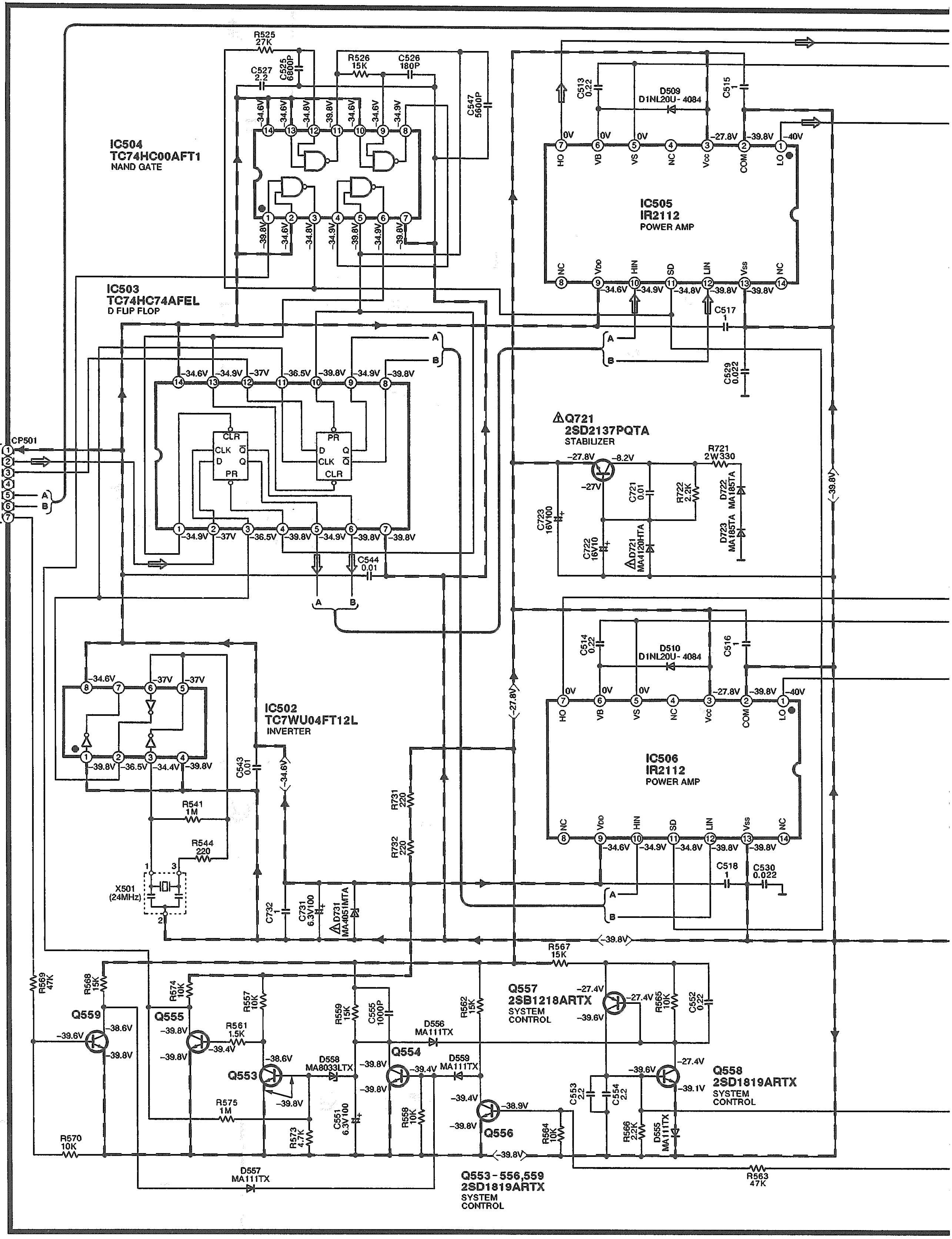
C PDM CIRCUIT (P.C.Board:on page 20)

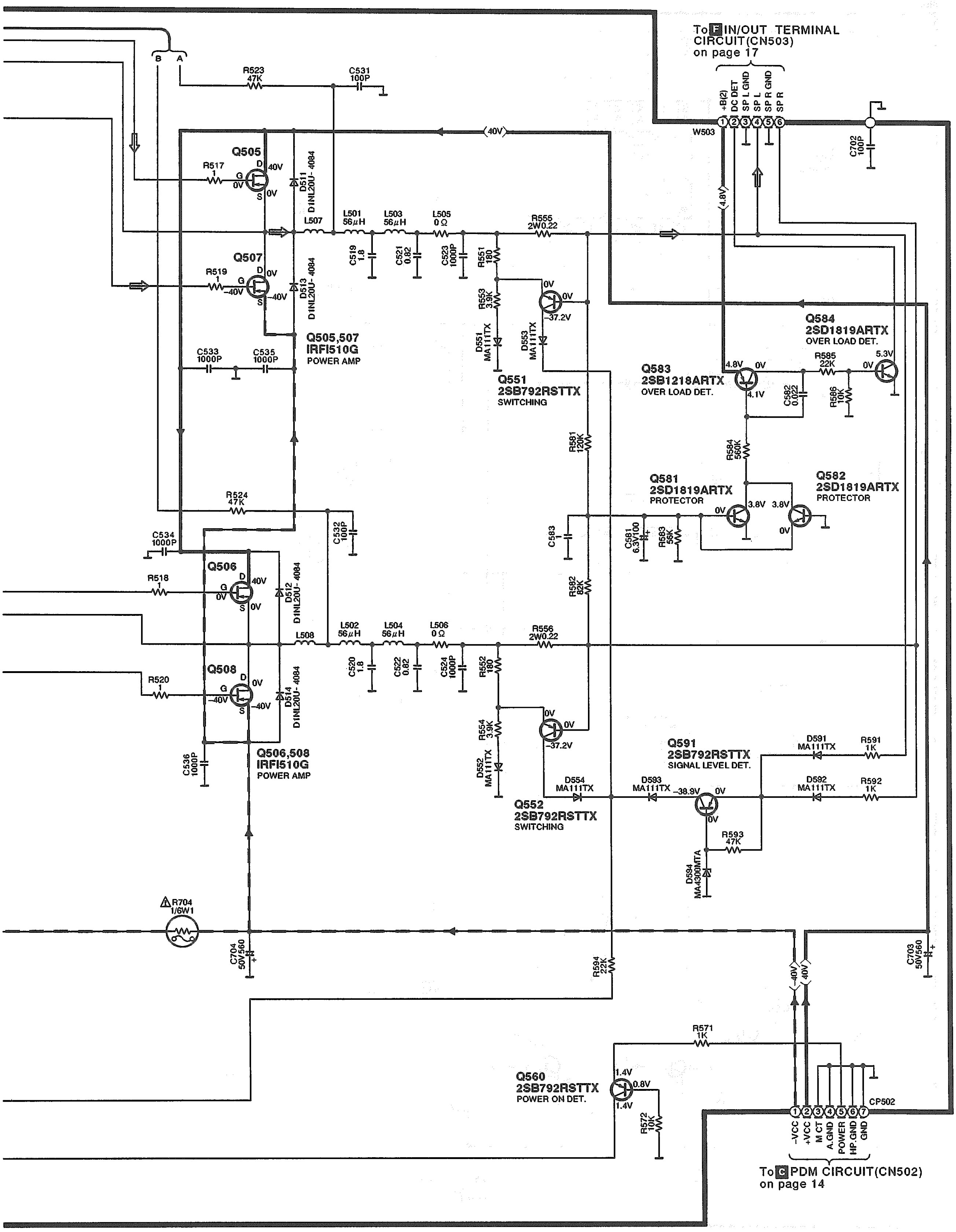


To D MAIN CIRCUIT (CP502) on page 16
CN502
-VCC
+VCC
M CT
A.GND
POWER
HP.GND
GND
L705
L704
Q501 - 504
2SB792RSTTX
PRE AMP
To E POWER SUPPLY CIRCUIT (CN504) on page 17
+VCC
A.GND
M CT
-VCC
POWER
W504
R505 10K
C503 1000P
C505 1000P
R507 300
R501 4.7K
R503 820K
C501 16V10
L511
Q501
Q503
R513 5.6K
R516 5.6K
-37V
3V
-3.6V
0.4V
IC501
NJM2114D
BUFFER AMP
C509 330P
R509 0Ω
W802
W803
L513
C502 16V10
R502 4.7K
D505 MA111TX
D507 MA111TX
L702
L703
L706
C511 0.01
-15.8V
0V
3V
C706 4700P
L515
L514
C561 4700P
R511 15K
R703 1/2W3.9K
C724 1000P
C725 1000P
R510 0Ω
C510 330P
R504 820K
15.8V
C512 0.01
R512 15K
C720 0.1
C719 25V47
D707 MA4150HTA
C504 1000P
C506 1000P
D506 MA111TX
D508 MA111TX
Q502
Q504
R506 10K
R508 240
R514 5.6K
R516 5.6K
C507 0.01
CN501
R702 1/2W1.8K
R701 1/2W1.8K
C710 0.1
C708 25V100
D706 MA4150HTA
C709 0.1
C707 25V100
D705 MA4150HTA
-39.8V
-37V
-34.6V
GND
IC507
TC7W08FTE12L
AND GATE
Vcc
C701 0.1
C705 0.1
L301 100μH
C333 16V10
Q303
-7.2V
R335 120
Q305
UN4115TA
MUTING CONT.
R336 120
Q304
L302 100μH
C334 16V10
Q303,304
2SD2144STA
MUTING
R332 2.2K
R802 1K
R801 820
S803 (VOCAL PRESENCE)
S802 (SOURCE DIRECT)
S801 (POWER)
Q801 - 803
UN4111AITA
LED DRIVE
R356 2.2K
Q803
Q802
Q801
7.4V
7.3V
6.2V
6.7V
10K
STANDBY:6.1V
STANDBY:1.7V
D804 MA165TA
R810 330
R807 330
R803 270
R805 4.7K
R808 100K
C354 1
VR801 (VOLUME/PULSE ENCODER)
D803 LNJ301MPUJAD (VOCAL PRESENCE)
D802 LNJ301MPUJAD (SOURCE DIRECT)
D801 LNJ201LPQJA (STANDBY)
(-7.4V)
(-7.4V)
(6.2V)
CN802
D.GND
MUTE
-B
+B(1)
SE L
SE R
VOCAL
A.GND
A.GND
+B(3)
AD1
VOLA
VOLB
DIRECT
To E POWER SUPPLY CIRCUIT(CN801) on page 17
A
B
C

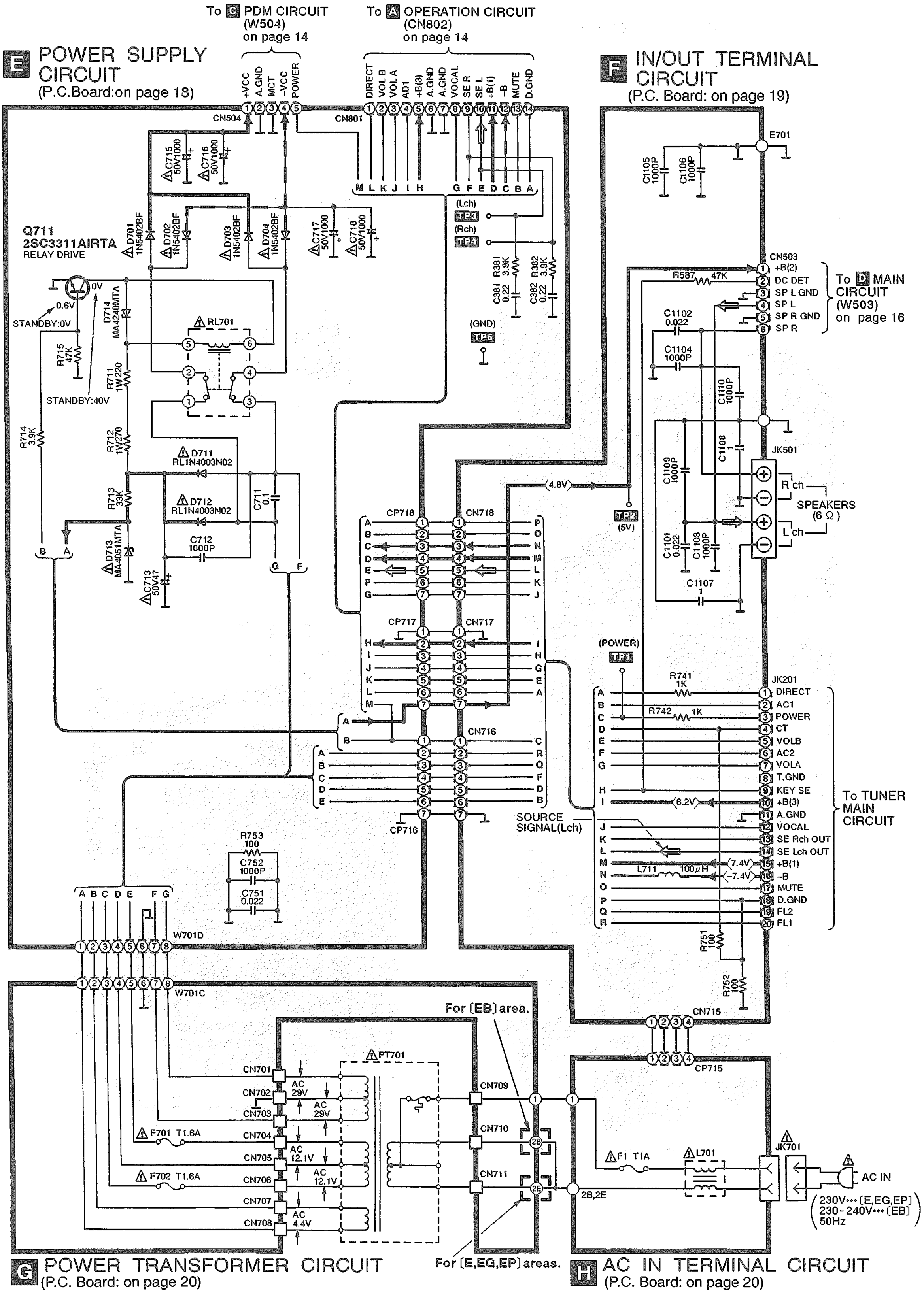
Note: ● ⇒: Source signal

D MAIN CIRCUIT (P.C.Board:on page 19)


IC504
TC74HC00AFT1
NAND GATE
IC503
TC74HC74AFEL
D FLIP FLOP
IC502
TC7WU04FT12L
INVERTER
IC505
IR2112
POWER AMP
IC506
IR2112
POWER AMP
Q721
2SD2137PQTA
STABILIZER
Q557
2SB1218ARTX
SYSTEM CONTROL
Q558
2SD1819ARTX
SYSTEM CONTROL
Q553-556,559
2SD1819ARTX
SYSTEM CONTROL
Q559
Q555
Q553
Q554
Q556
CP501
X501 (24MHz)
R525 27K
C527 2.2
C525 6800P
R526 15K
C526 180P
C547 5600P
C513 0.22
D509 D1NL20U-4084
C515 1
C517 1
C529 0.022
R721 2W330
C721 0.01
R722 2.2K
D722 MA185TA
D723 MA185TA
C723 16V100
C722 16V10
D721 MA4120HTA
C544 0.01
C514 0.22
D510 D1NL20U-4084
C516 1
C543 0.01
R541 1M
R544 220
R731 220
R732 220
C518 1
C530 0.022
C732 1
C731 6.3V100
D731 MA4051MTA
R567 15K
R569 47K
R568 15K
R574 10K
R557 10K
R561 1.5K
R559 15K
C555 1000P
D556 MA111TX
R562 15K
R565 10K
C552 0.22
D558 MA8033LTX
D559 MA111TX
R575 1M
R573 4.7K
C551 6.3V100
R558 10K
C553 2.2
C554 2.2
R564 10K
R566 22K
D555 MA111TX
R570 10K
D557 MA111TX
R563 47K
HO VB VS NC Vcc COM LO
NC VDD HIN SD LIN Vss NC
CLR CLK D Q PR
A
B


To F IN/OUT TERMINAL CIRCUIT(CN503) on page 17
+B(2)
DC DET
SP L GND
SP L
SP R GND
SP R
W503
C702 100P
B
A
R523 47K
C531 100P
40V
Q505
R517 1
G
D
S
40V
0V
0V
D511 D1NL20U-4084
L507
L501 56μH
L503 56μH
L505 0Ω
R555 2W0.22
4.8V
C519 1.8
C521 0.82
C523 1000P
R551 180
Q507
R519 1
0V
-40V
-40V
D513 D1NL20U-4084
R553 3.9K
0V
0V
-37.2V
D551 MA111TX
D553 MA111TX
Q505,507 IRFI510G POWER AMP
C533 1000P
C535 1000P
Q551 2SB792RSTTX SWITCHING
Q584 2SD1819ARTX OVER LOAD DET.
R585 22K
5.3V
0V
Q583 2SB1218ARTX OVER LOAD DET.
4.8V
0V
4.1V
C582 0.022
R586 10K
R581 120K
R584 560K
Q581 2SD1819ARTX PROTECTOR
Q582 2SD1819ARTX PROTECTOR
3.8V
3.8V
0V
0V
R524 47K
C532 100P
C534 1000P
C583 1
C581 6.3V100
R583 56K
Q506
R518 1
40V
0V
0V
D512 D1NL20U-4084
R582 82K
L508
L502 56μH
L504 56μH
L506 0Ω
R556 2W0.22
Q508
R520 1
0V
-40V
-40V
D514 D1NL20U-4084
C520 1.8
C522 0.82
C524 1000P
R552 180
R554 3.9K
0V
0V
-37.2V
C536 1000P
Q506,508 IRFI510G POWER AMP
D552 MA111TX
Q552 2SB792RSTTX SWITCHING
D554 MA111TX
D593 MA111TX
-38.9V
0V
0V
Q591 2SB792RSTTX SIGNAL LEVEL DET.
D591 MA111TX
R591 1K
D592 MA111TX
R592 1K
R593 47K
D594 MA4300MTA
R704 1/6W1
C704 50V560
R594 22K
-40V
40V
C703 50V560
R571 1K
Q560 2SB792RSTTX POWER ON DET.
1.4V
0.8V
1.4V
R572 10K
CP502
-VCC
+VCC
M CT
A.GND
POWER
HP.GND
GND
To C PDM CIRCUIT(CN502) on page 14

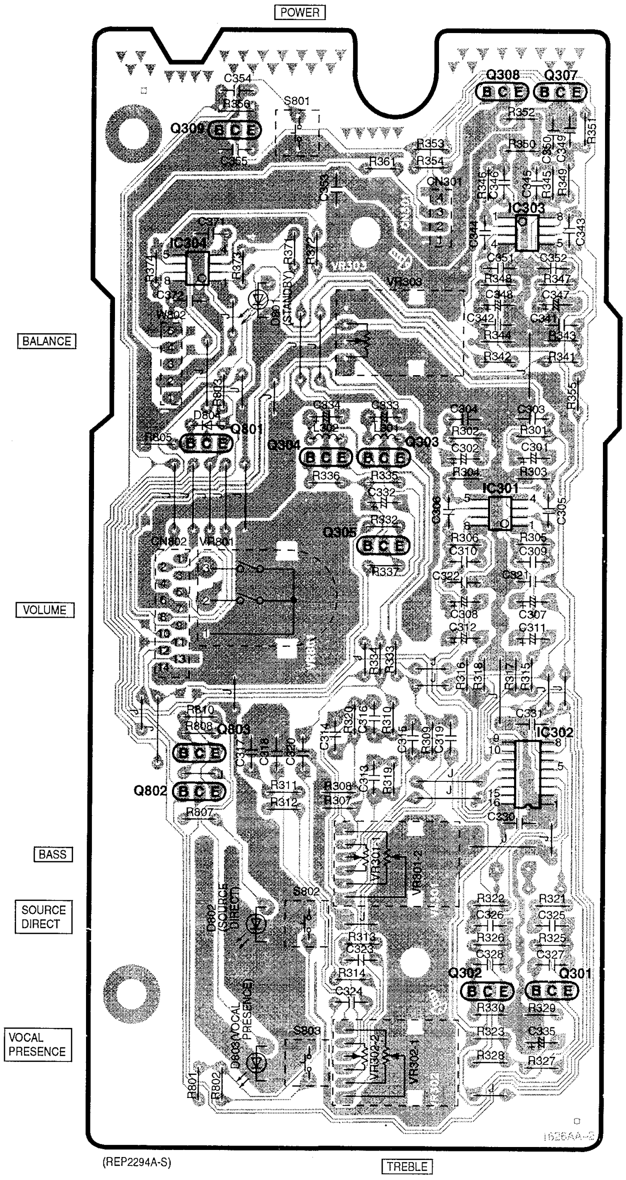
Note: ● ⇨: Source signal


E POWER SUPPLY CIRCUIT
(P.C.Board:on page 18)
To C PDM CIRCUIT (W504) on page 14
To A OPERATION CIRCUIT (CN802) on page 14
F IN/OUT TERMINAL CIRCUIT
(P.C. Board: on page 19)
+VCC
A.GND
MCT
-VCC
POWER
DIRECT
VOL B
VOL A
AD1
+B(3)
A.GND
A.GND
VOCAL
SE R
SE L
+B(1)
-B
MUTE
D.GND
CN504
CN801
C715 50V1000
C716 50V1000
M L K J I H G F E D C B A
(Lch) TP3
(Rch) TP4
Q711 2SC3311AIRTA RELAY DRIVE
D701 1N5402BF
D702 1N5402BF
D703 1N5402BF
D704 1N5402BF
C717 50V1000
C718 50V1000
R381 3.3K
R382 3.3K
C381 0.22
C382 0.22
(GND) TP5
0V
0.6V
STANDBY:0V
D714 MA4240MTA
RL701
R715 47K
R711 1W220
STANDBY:40V
R714 3.9K
R712 1W270
D711 RL1N4003N02
D712 RL1N4003N02
C711 0.1
R713 33K
C712 1000P
D713 MA4051MTA
C713 50V47
E701
C1105 1000P
C1106 1000P
CN503
+B(2)
R587 47K
DC DET
SP L GND
SP L
SP R GND
SP R
To D MAIN CIRCUIT (W503) on page 16
C1102 0.022
C1104 1000P
C1110 1000P
JK501
C1109 1000P
C1108 1
R ch
SPEAKERS (6 Ω)
L ch
C1101 0.022
C1103 1000P
C1107 1
4.8V
TP2 (5V)
CP718
CN718
CP717
CN717
CN716
CP716
(POWER) TP1
R741 1K
R742 1K
JK201
DIRECT
AC1
POWER
CT
VOLB
AC2
VOLA
T.GND
KEY SE
+B(3)
A.GND
VOCAL
SE Rch OUT
SE Lch OUT
+B(1)
-B
MUTE
D.GND
FL2
FL1
To TUNER MAIN CIRCUIT
6.2V
SOURCE SIGNAL(Lch)
L711 100μH
7.4V
-7.4V
R751 100
R752 100
R753 100
C752 1000P
C751 0.022
W701D
W701C
CN715
CP715
For [EB] area.
PT701
CN701
CN702
CN703
AC 29V
AC 29V
F701 T1.6A
CN704
CN705
AC 12.1V
AC 12.1V
F702 T1.6A
CN706
CN707
CN708
AC 4.4V
CN709
CN710
CN711
2B
2E
2B,2E
F1 T1A
L701
JK701
AC IN
(230V··· [E,EG,EP] 230-240V··· [EB] 50Hz)
For [E,EG,EP] areas.
G POWER TRANSFORMER CIRCUIT
(P.C. Board: on page 20)
H AC IN TERMINAL CIRCUIT
(P.C. Board: on page 20)

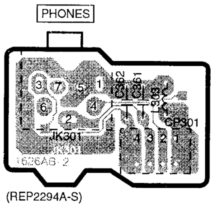
Printed Circuit Board Diagram

(This printed circuit board diagram may be modified at any time with the development of new technology.)

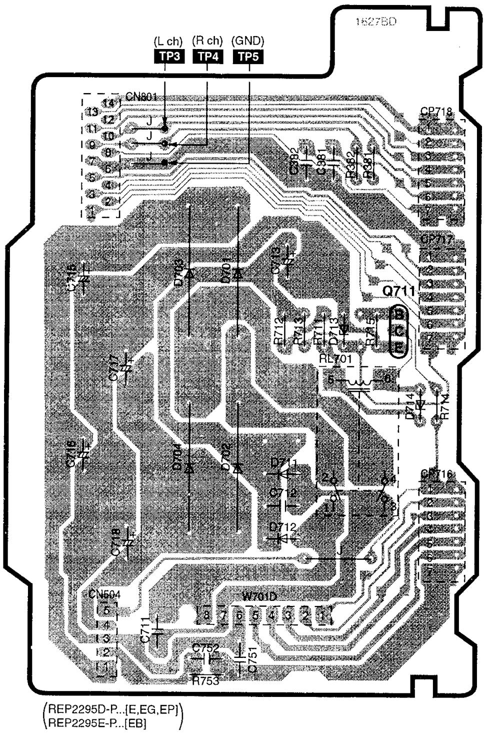
A OPERATION P.C.B.


POWER
BALANCE
VOLUME
BASS
SOURCE DIRECT
VOCAL PRESENCE
TREBLE
(REP2294A-S)
S801
Q309
Q308
Q307
IC304
IC303
IC301
IC302
CN301
CN802
VR801
VR303
VR301-1
VR301-2
VR302-1
VR302-2
Q801
Q304
Q303
Q305
Q803
Q802
Q302
Q301
S802
S803
D801 (STANDBY)
D802 (SOURCE DIRECT)
D803 (VOCAL PRESENCE)

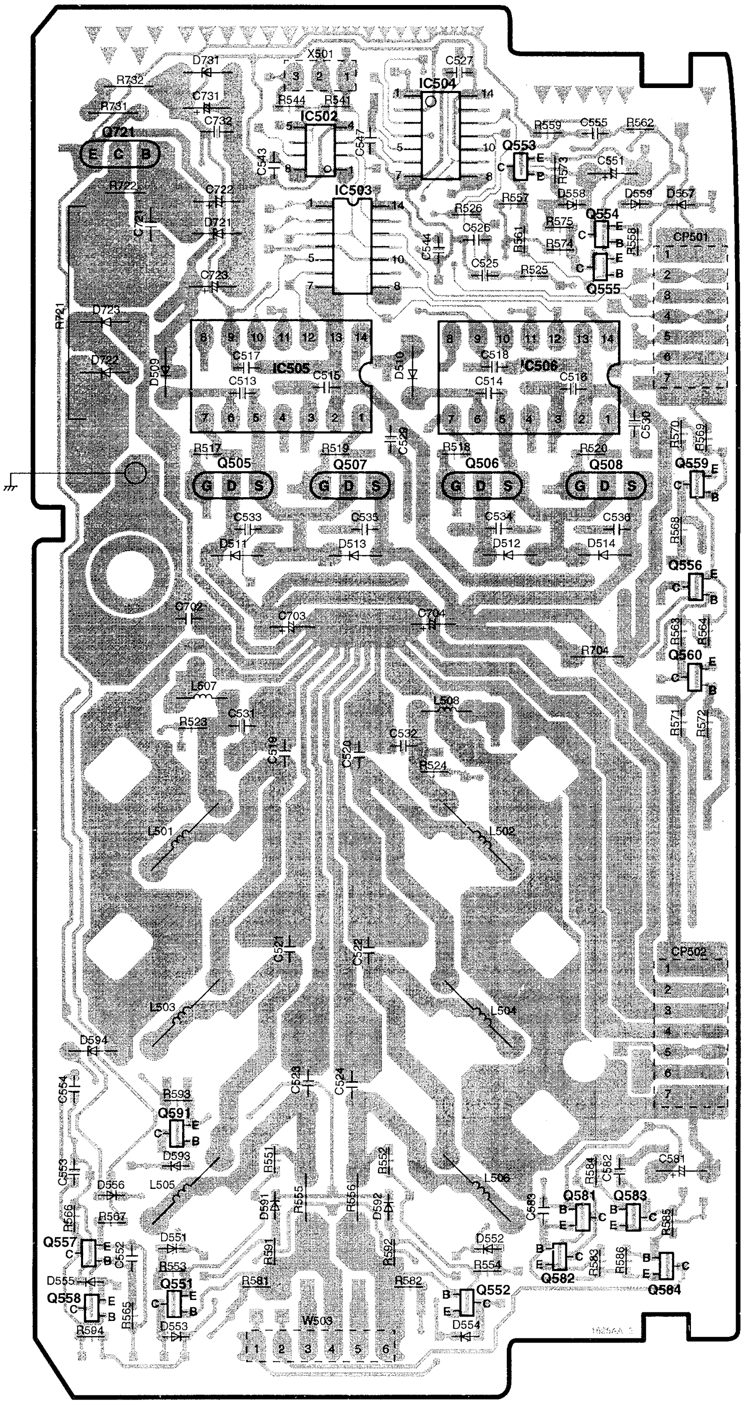
B HEADPHONES JACK P.C.B.


PHONES
JK301
CP301
(REP2294A-S)

E POWER SUPPLY P.C.B.

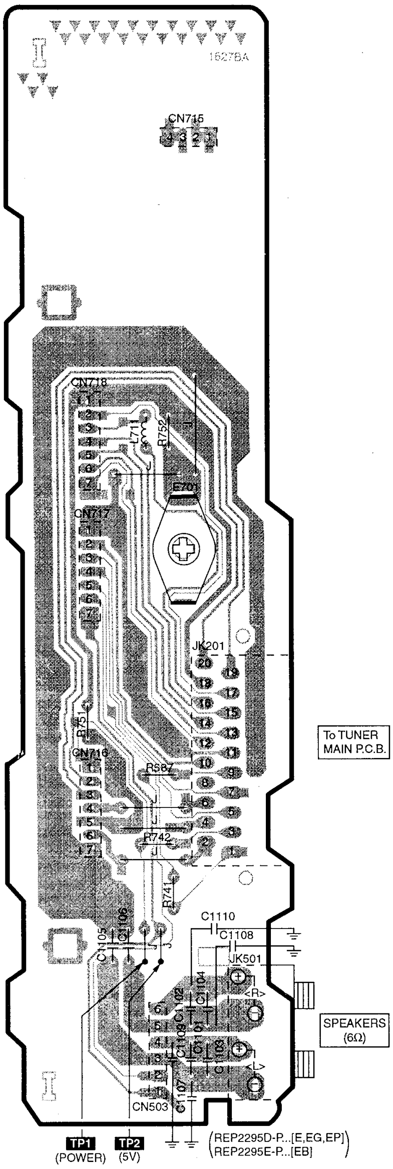

(L ch)
(R ch)
(GND)
TP3
TP4
TP5
CN801
CP718
CP717
CP716
Q711
RL701
D701
D702
D703
D704
W701D
CN504
C711
C752
R753
(REP2295D-P...[E,EG,EP]
REP2295E-P...[EB])

D MAIN P.C.B.


X501
D731
C527
IC504
R732
C731
R544
R541
IC502
C733
R731
Q721
E C B
C547
C543
Q553
R559
C555
R562
C551
R573
R722
C722
IC503
D721
C721
R557
D558
D559
D557
R526
R575
Q554
C526
C544
R561
R574
R558
C525
R525
Q555
C723
CP501
R721
D723
D722
D509
C517
IC505
C513
C515
D510
C518
IC506
C514
C516
C529
C530
R517
Q505
R519
Q507
R518
Q506
R520
Q508
R570
R569
Q559
G D S
C533
C535
C534
C536
D511
D513
D512
D514
R568
Q556
C702
C703
C704
R704
R563
R564
Q560
L507
C531
R523
L508
C532
C519
C520
R524
R571
R572
L501
L502
C521
C522
CP502
L503
L504
D594
C554
R593
Q591
D593
C523
C524
C553
D556
L505
R551
R555
R556
R552
L506
R584
C582
C581
R566
R567
D591
D592
C583
Q581
Q583
Q557
C552
D551
D552
R585
R553
R591
R592
R554
Q582
R583
R586
D555
Q551
R581
R582
Q552
Q584
Q558
R565
R594
D553
W503
D554
1 2 3 4 5 6 7

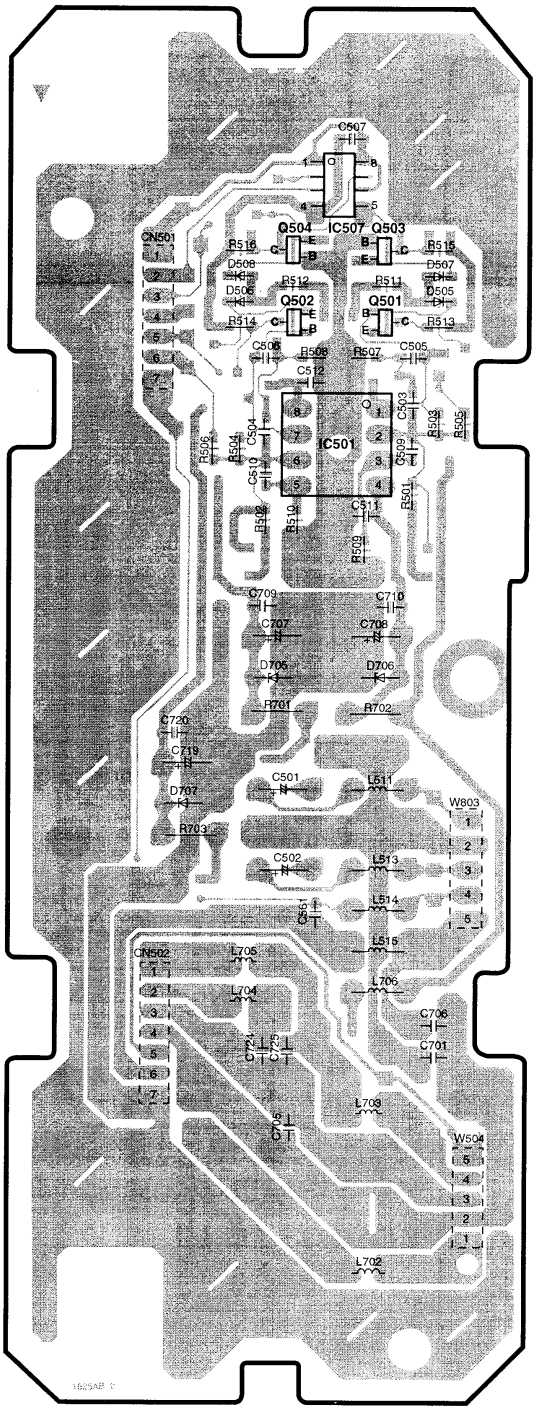
(REP2293B-M)

F IN/OUT TERMINAL P.C.B.


1527BA
CN715
CN718
L711
R752
E701
CN717
JK201
R751
To TUNER MAIN P.C.B.
CN716
R567
R742
R741
C1105
C1106
C1110
C1108
JK501
<R>
C1104
C1102
C1109
C1101
C1103
<L>
C1107
CN503
SPEAKERS (6Ω)
TP1
(POWER)
TP2
(5V)

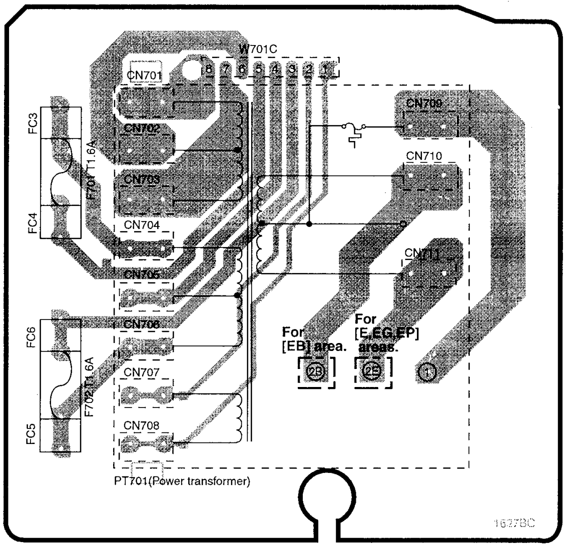
(REP2295D-P...[E,EG,EP])
(REP2295E-P...[EB])

C PDM P.C.B.


C507
IC507
Q504
Q503
CN501
R516
R515
D508
D507
R512
R511
D506
D505
Q502
Q501
R514
R513
C506
R508
R507
C505
C512
IC501
C503
R503
R505
R506
R504
C504
C509
C510
R501
R502
R519
C511
R509
C709
C710
C707
C708
D705
D706
R701
R702
C720
C719
D707
R703
C501
L511
W803
C502
L513
C551
L514
L515
CN502
L705
L706
L704
C706
C724
C725
C701
L703
C705
W504
L702
1625AB

(REP2293B-M)

G POWER TRANSFORMER P.C.B.

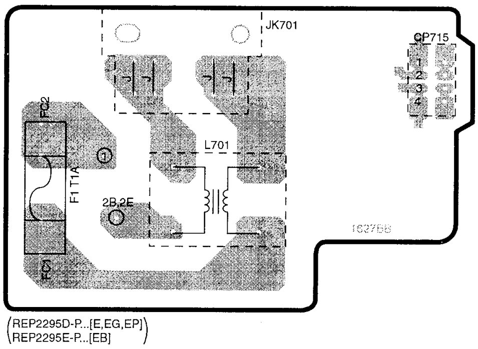

W701C
CN701
CN702
CN703
CN704
CN705
CN706
CN707
CN708
CN709
CN710
CN711
FC3
FC4
FC5
FC6
F701 T1.6A
F702 T1.6A
For [EB] area.
For [E,EG,EP] areas.
2B
2E
1
PT701(Power transformer)
1627BC

(REP2295D-P...[E,EG,EP])
(REP2295E-P...[EB])

H AC IN TERMINAL P.C.B.

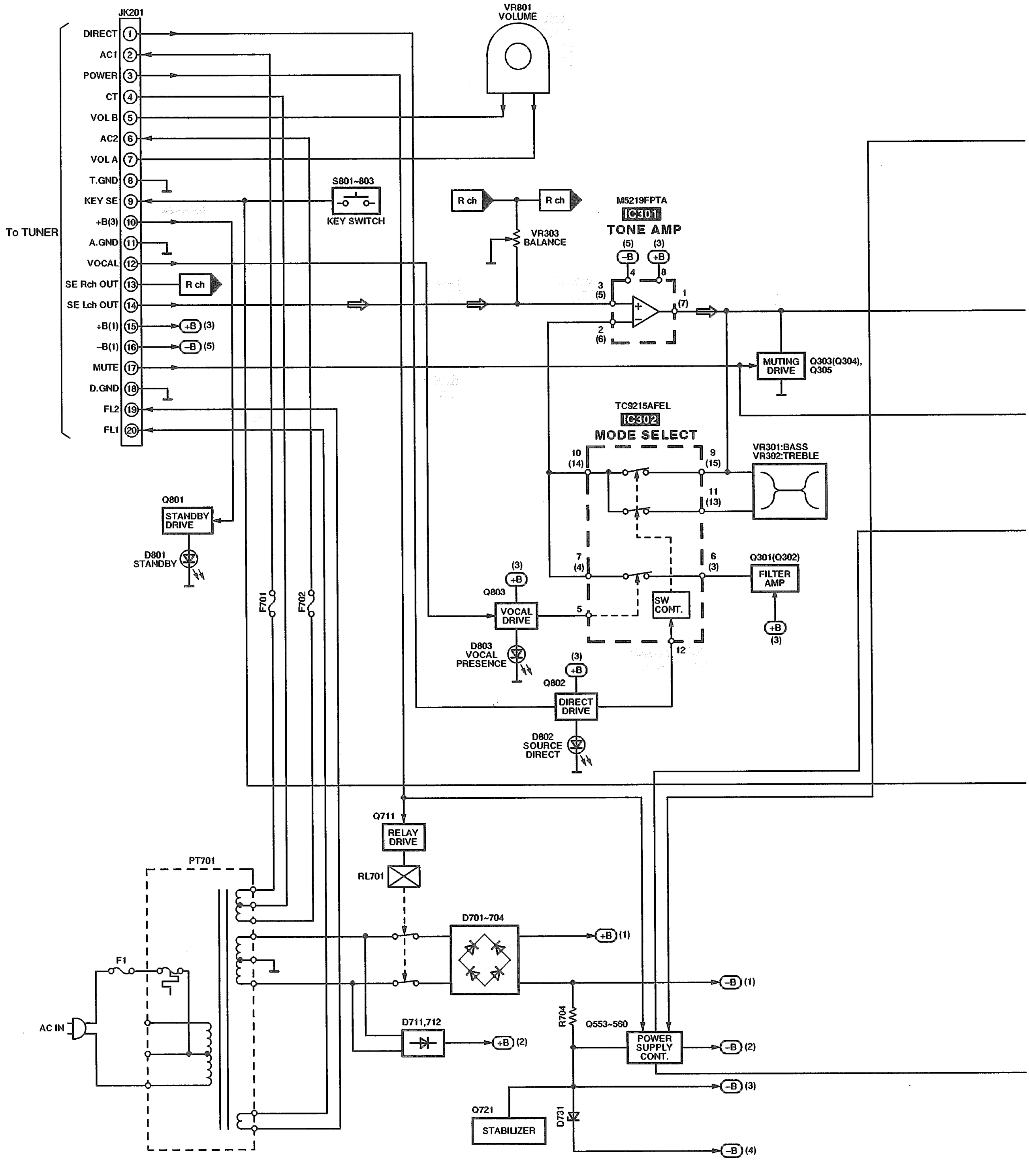
AC IN

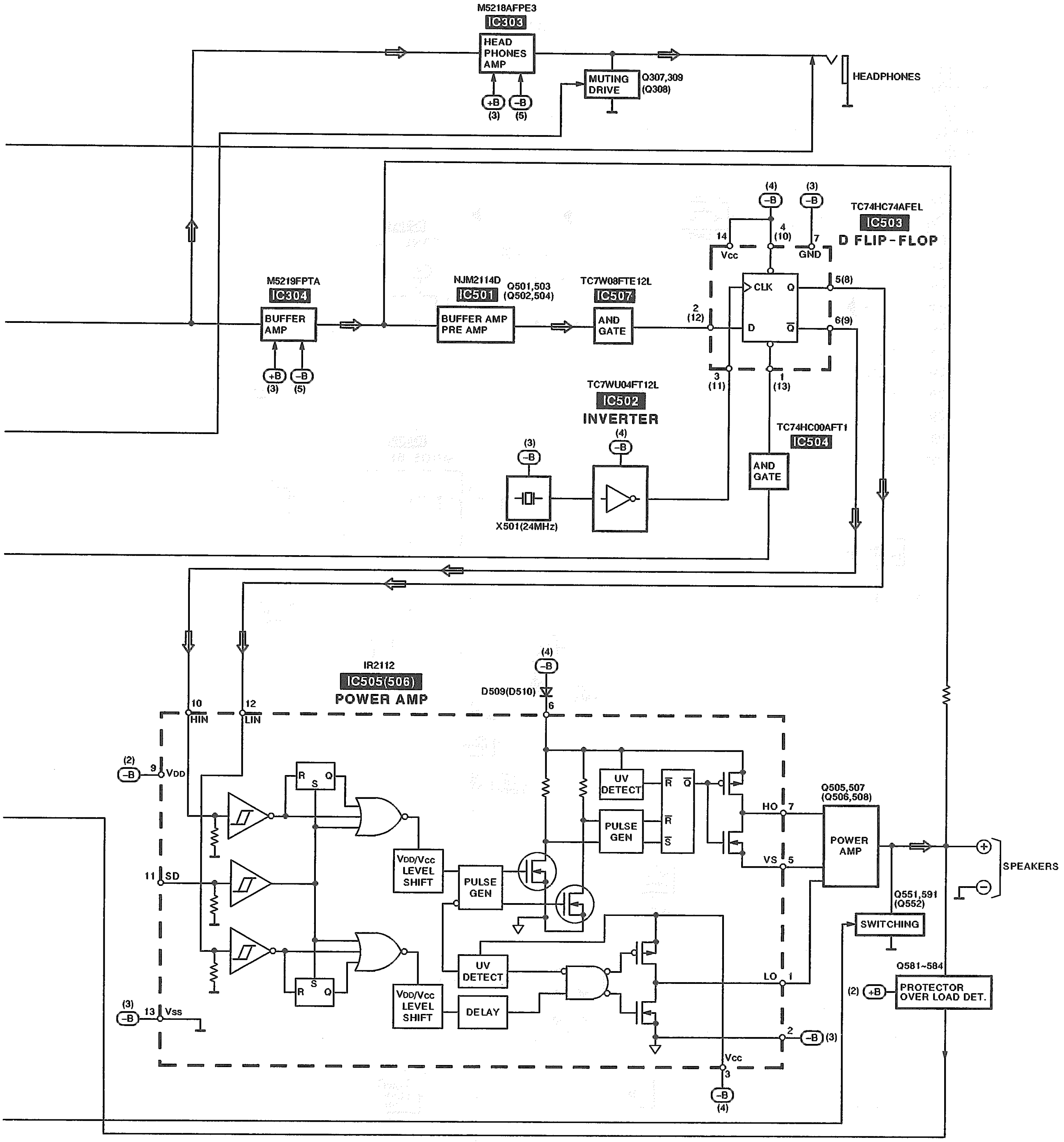
(230V..........[E,EG,EP])
(230-240V...[EB])
(50Hz)


JK701
CP715
FC2
FC1
F1 T1A
1
2B,2E
L701
1627BB

(REP2295D-P...[E,EG,EP])
(REP2295E-P...[EB])

Block Diagram


JK201
DIRECT ①
AC1 ②
POWER ③
CT ④
VOL B ⑤
AC2 ⑥
VOL A ⑦
T.GND ⑧
KEY SE ⑨
+B(3) ⑩
A.GND ⑪
VOCAL ⑫
SE Rch OUT ⑬
SE Lch OUT ⑭
+B(1) ⑮
–B(1) ⑯
MUTE ⑰
D.GND ⑱
FL2 ⑲
FL1 ⑳
To TUNER
R ch
+B (3)
–B (5)
VR801
VOLUME
S801~803
KEY SWITCH
R ch
R ch
VR303
BALANCE
M5219FPTA
IC301
TONE AMP
(5) –B
(3) +B
4
8
3
(5)
2
(6)
1
(7)
MUTING DRIVE
Q303(Q304), Q305
TC9215AFEL
IC302
MODE SELECT
10
(14)
9
(15)
11
(13)
7
(4)
6
(3)
5
12
SW CONT.
VR301:BASS
VR302:TREBLE
Q301(Q302)
FILTER AMP
+B (3)
Q801
STANDBY DRIVE
D801
STANDBY
F701
F702
(3) +B
Q803
VOCAL DRIVE
D803
VOCAL PRESENCE
(3) +B
Q802
DIRECT DRIVE
D802
SOURCE DIRECT
Q711
RELAY DRIVE
RL701
PT701
F1
AC IN
D701~704
+B (1)
–B (1)
D711,712
+B (2)
R704
Q553~560
POWER SUPPLY CONT.
–B (2)
–B (3)
Q721
STABILIZER
D731
–B (4)


M5218AFPE3
IC303
HEAD PHONES AMP
(+B) (3)
(−B) (5)
MUTING DRIVE
Q307,309 (Q308)
HEADPHONES
M5219FPTA
IC304
BUFFER AMP
(+B) (3)
(−B) (5)
NJM2114D
IC501
Q501,503 (Q502,504)
BUFFER AMP PRE AMP
TC7W08FTE12L
IC507
AND GATE
TC74HC74AFEL
IC503
D FLIP-FLOP
(4) −B
(3) −B
14 Vcc
4 (10)
7 GND
CLK
Q
D
Q̄
5(8)
6(9)
2 (12)
3 (11)
1 (13)
TC7WU04FT12L
IC502
INVERTER
(3) −B
(4) −B
X501(24MHz)
TC74HC00AFT1
IC504
AND GATE
IR2112
IC505(506)
POWER AMP
(4) −B
D509(D510)
6
10 HIN
12 LIN
(2) −B
9 VDD
11 SD
(3) −B
13 Vss
R S Q
VDD/Vcc LEVEL SHIFT
PULSE GEN
UV DETECT
R Q̄
R S̄
PULSE GEN
UV DETECT
DELAY
HO 7
VS 5
LO 1
2 −B (3)
Vcc 3
−B (4)
Q505,507 (Q506,508)
POWER AMP
Q551,591 (Q552)
SWITCHING
Q581~584
(2) +B
PROTECTOR OVER LOAD DET.
+
−
SPEAKERS

Notes:

1) ⇨ :SOURCE SIGNAL

2) ( )INDICATES PIN NO. OF RIGHT CHANNEL.

Replacement Parts List

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

* Remote Control Ass'y: Supply period for three years from termination of production.

* Capacity values are in microfarads (uF) unless specified otherwise,
P=Pico-farads (pF) F=Farads (F)

* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

* "<IA>, <IB>, <IC>, <ID>, <IE>" marks in Remarks indicate language of instruction manual.
[<IA>: French/Spanish/Swedish, <IB>: German/Italian/Dutch, <IC>: Danish, <ID>: English, <IE>: Russian/Czeco/Polish]

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RHD30073-K	SCREW	4	
2	XTBS3+10JFZ1	SCREW	1	
3	XTBS3+8JFZ1	SCREW	17	
4	RSC0457	SHIELD BRACKET	1	
5	RKA0076-N	FOOT	4	
6	REZ0900	FLAT CABLE(CN801, 802/14P)	1	
7	RGW0247A-N	VOLUME KNOB	1	
8	REZ0902	CONNECTOR ASS'Y(5P)(W802)	1	
9	RMN0191	P.C.B. HOLDER	1	
10	RMN0203	P.C.B. HOLDER	4	
11	XTB3+6G	SCREW	4	
12	RGK0809-1M	SIDE PANEL(R)	1	
13	RGK0808-1M	SIDE PANEL(L)	1	
14	RLBT3101-D	FERRITE CORE	1	
15	RLBT4001-D	FERRITE CORE	1	
16	RLB0010	FERRITE CORE	1	
17	RMZ0397	BARRIER	1	
18	XTB3+16JFZ	SCREW	1	
19	RMF0236	SHEET	1	
20	RJS2A1305	CABLE HOLDER(W504)	1	
21	RMR0985-K	EDGE HOLDER	1	
22	SHE185-2	P.C.B. SUPPORT	1	
23	XTBS26+8J	SCREW	4	
24	SNE4021-1	NUT	1	
25	RHD26016	SCREW	1	
26	XTB3+6JFZ	SCREW	22	
27	RGW0198-S	ADJUSTMENT KNOB	3	
28	RGU1393-Q	BUTTON	1	
29	RFKGEHD81E-N	FRONT PANEL ASS'Y	1	
30	RGK0810-N3	SIDE ORNAMENT(L)	1	
31	RGK0811-N3	SIDE ORNAMENT(R)	1	
32	RGK0815-N	VOLUME ORNAMENT	1	
33	RGL0333-2Q	PANEL LIGHT	1	
34	RGU1392-S	BUTTON	1	
35	REZ0901	CONNECTOR ASS'Y	1	
36	REZ0903	FLAT CABLE(8P)(W701)	1	
37	RJS1A5506	CABLE HOLDER(W503)	1	
A1	RQT4304-E	INSTRUCTION MANUAL	1	(E)<IA>
A1	RQT4305-D	INSTRUCTION MANUAL	1	(EG)<IB>
A1	RQT4306-H	INSTRUCTION MANUAL	1	(EG)<IC>
A1	RQT4307-B	INSTRUCTION MANUAL	1	(EB)(EP)<ID>
A1	RQT4308-R	INSTRUCTION MANUAL	1	(EP)<IE>
A2	REX0608	FLAT CABLE (SHORT)(20P)	1	
A3	REX0812	FLAT CABLE(LONG)(19P)	1	
A4	REX0813	FLAT CABLE(MIDDLE)(15P)	1	
A5	RFA0737-R	SPEAKER CORD UNIT	1	
A6	RJA0019-X	AC POWER SUPLLY CORD	1	(E)(EG)(EP)
A6	RJA0053-1X	AC POWER SUPPLY CORD	1	(EB)
A7	RAK-CH214WH	REMOTE CONTROL TRANSMITTER	1	
A7-1	RKK0057-K	BATTERY COVER FOR R.C.T.	1	
A8	RQA0117	WARRANTY CARD	1	(E)(EB)(EG)
A9	RQCB0169	SERVICENTER LIST	1	(E)(EB)(EG)
A10	RSA0007	FM INDOOR ANTENNA	1	
A11	RSA0021	AM LOOP ANTENNA	1	
A12	RQCA0600	QUICK SET UP GUIDE	1	(EB)
A13	SJP9009	ANTENNA PLUG ADAPTOR	1	(EB)
C301, 02	ECEA1HKAR22B	50V 0.22U	2	
C303, 04	ECBT1H101KB5	50V 100P	2	
C305, 06	ECBT1H820KB5	50V 82P	2	
C307, 08	RCE1CKA100BG	16V 10U	2	
C309, 10	ECBT1H390J5	50V 39P	2	
C311, 12	ECEA1HKA2R2B	50V 2.2U	2	
C313, 14	ECQV1H823JM3	50V 0.082U	2	
C315, 16	ECQB1H153JF3	50V 0.015U	2	
C317, 18	ECQB1H183JF3	50V 0.018U	2	
C319, 20	ECQB1H222JF3	50V 2200P	2	
C321, 22	ECBT1E223ZF5	25V 0.022U	2	
C323, 24	ECBT1H121KB5	50V 120P	2	
C325, 26	ECQV1H333JM3	50V 0.033U	2	
C327, 28	ECQB1H122JF3	50V 1200P	2	
C330, 31	ECBT1E103ZF5	25V 0.01U	2	
C332	ECEA1HKA010B	50V 1U	1	
C333, 34	RCE1CKA100BG	16V 10U	2	
C335	RCE1AKA101BG	10V 100U	1	
C341-44	ECBT1H101KB5	50V 100P	4	
C345, 46	ECBT1H331KB5	50V 330P	2	
C347, 48	RCE1CKA100BG	16V 10U	2	
C349-52	ECBT1E103ZF5	25V 0.01U	4	
C353	ECBT1H102KB5	50V 1000P	1	
C354, 55	ECBT1C105ZF5	16V 1U	2	
C361, 62	ECBT1H473ZF5	50V 0.047U	2	
C371, 72	ECBT1E103ZF5	25V 0.01U	2	
C381, 82	ECQV1H224JM3	50V 0.22U	2	
C501, 02	RCE1CKA100BG	16V 10U	2	
C503-06	ECUV1H102KBN	50V 1000P	4	
C507	ECUV1E103ZFN	25V 0.01U	1	
C509, 10	ECUV1H331KBN	50V 330P	2	
C511, 12	ECUV1E103ZFN	25V 0.01U	2	
C513, 14	ECUV1E224ZFN	25V 0.22U	2	
C515-18	ECUVNC105ZFN	16V 1U	4	
C519, 20	ECQV1H185JL3	50V 1.8U	2	
C521, 22	ECQV1H824JM3	50V 0.82U	2	
C523, 24	ECKR1H102KB5	50V 1000P	2	
C525	ECUV1H682KBN	50V 6800P	1	
C526	ECUV1H181KCN	50V 180P	1	
C527	ECUVNC225ZFN	16V 2.2U	1	
C529, 30	ECUV1H223ZFN	50V 0.022U	2	
C531, 32	ECUV2H101JCM	500V 100P	2	
C533-36	ECUV1H102KBN	50V 1000P	4	
C543, 44	ECUV1E103ZFN	25V 0.01U	2	
C547	ECUV1H562KBN	50V 5600P	1	
C551	ECEA0JKA101B	6.3V 100U	1	
C552	ECUV1E224ZFN	25V 0.22U	1	
C553, 54	ECUVNC225ZFN	16V 2.2U	2	
C555	ECUV1H102KBN	50V 1000P	1	
C561	ECUV1H472KBN	50V 4700P	1	
C581	ECEA0JKA101B	6.3V 100U	1	
C582	ECUV1E223ZFN	25V 0.022U	1	
C583	ECUVNC105ZFN	16V 1U	1	
C701	ECUV1E104ZFN	25V 0.1U	1	
C702	ECUV1H101KCN	50V 100P	1	
C703, 04	EEUFA1H561E	50V 560U	2	

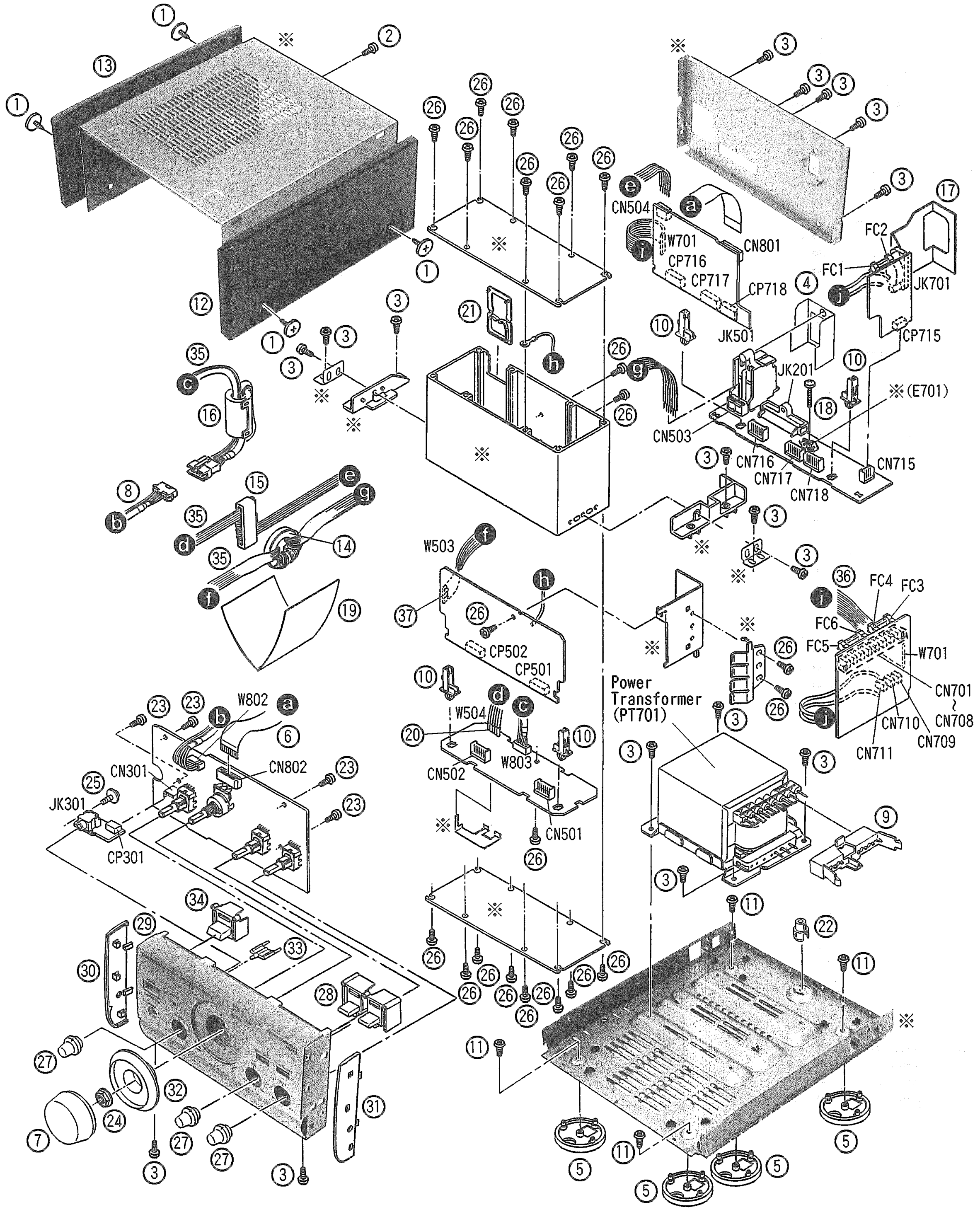
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C705	ECUV1E104ZFN	25V 0.1U	1	
C706	ECUV1H472KBN	50V 4700P	1	
C707,08	ECA1EM101B	25V 100U	2	
C709,10	ECUV1E104ZFN	25V 0.1U	2	
C711	ECQE1104KF3	100V 0.1U	1	
C712	ECKR2H102ZF5	500V 1000P	1	
⚠ C713	ECA1HM470B	50V 47U	1	
⚠ C715-18	EEUPL1H102LE	50V 1000U	4	
C719	ECEA1EKA470B	25V 47U	1	
C720	ECUV1E104ZFN	25V 0.1U	1	
C721	ECUV1E103ZFN	25V 0.01U	1	
C722	RCE1CKA100BG	16V 10U	1	
C723	ECEA1CKA101B	16V 100U	1	
C724,25	ECUV1H102KBN	50V 1000P	2	
C731	ECEA0JKA101B	6.3V 100U	1	
C732	ECUVNC105ZFN	16V 1U	1	
C751	ECBT1E223ZF5	25V 0.022U	1	
C752	ECBT1H102KB5	50V 1000P	1	
C1101,02	ECBT1E223ZF5	25V 0.022U	2	
C1103-06	ECBT1H102KB5	50V 1000P	4	
C1107,08	ECBT1C105ZF5	16V 1U	2	
C1109,10	ECBT1H102KB5	50V 1000P	2	
CN301	RJT057W004-1	CONNECTOR(4P)	1	
CN501,02	RJT057W007-1	CONNECTOR(7P)	2	
CN503	RJS1A6606	CONNECTOR(6P)	1	
CN504	RJS5T7ZA	CONNECTOR(5P)	1	
CN701-11	RJS1A1101T1	CONNECTOR(1P)	11	
CN715	RJT057W004-1	CONNECTOR(4P)	1	
CN716-18	RJT057W007-1	CONNECTOR(7P)	3	
CN801,02	RJS1A6714	CONNECTOR(14P)	2	
CP301	RJU057W004	SOCKET(4P)	1	
CP501,02	RJU057W007	SOCKET(7P)	2	
CP715	RJU057W004	SOCKET(4P)	1	
CP716-18	RJU057W007	SOCKET(7P)	3	
D505-08	MA111TX	DIODE	4	
D509-14	D1NL20U-4084	DIODE	6	
D551-57	MA111TX	DIODE	7	
D558	MA8033LTX	DIODE	1	
D559	MA111TX	DIODE	1	
D591-93	MA111TX	DIODE	3	
D594	MA4300MTA	DIODE	1	
⚠ D701-04	1N5402BF	DIODE	4	
⚠ D705-07	MA4150M	DIODE	3	
⚠ D711,12	RL1N4003N02	DIODE	2	
⚠ D713	MA4051MTA	DIODE	1	
D714	MA4240MTA	DIODE	1	
⚠ D721	MA4120HTA	DIODE	1	
D722,23	MA185TA	DIODE	2	
⚠ D731	MA4051MTA	DIODE	1	
D801	LNJ201LPQJA	L.E.D.	1	
D802,03	LNJ301MPUJAD	L.E.D.	2	
D804	MA165	DIODE	1	
⚠ F1	XBA2C10TB0	FUSE	1	
⚠ F701,02	XBA2C16TB0	FUSE	2	
FC1-C6	EYF52BC	FUSE HOLDER	6	
IC301	M5219FPTA	IC	1	
IC302	TC9215AFEL	IC	1	
IC303	M5218AFPE3	IC	1	
IC304	M5219FPTA	IC	1	
IC501	NJM2114D	IC	1	
IC502	TC7WU04FT12L	IC	1	
IC503	TC74HC74AFEL	IC	1	
IC504	TC74HC00AFT1	IC	1	
IC505,06	IR2112	IC	2	
IC507	TC7W08FTE12L	IC	1	
JK201	RJT065K20	JACK,SYSTEM	1	
JK301	RJJ37TN01-C	JACK,HEADPHONES	1	
JK501	RJR0054	JACK,SPEAKERS	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ JK701	SJS9236	JACK,AC INLET	1	
L301,02	ELEXT101KA9	COIL	2	
L303	RLL500050T-Y	COIL	1	
L501	RLQT560K	COIL	1	
L502	RLQT560K1	COIL	1	
L503	RLQT560K	COIL	1	
L504	RLQT560K1	COIL	1	
L505,06	ERD25V0R00T	COIL	2	
L507,08	BL02RN1R62T2	COIL	2	
L511	BL02RN2R62T4	COIL	1	
L513-15	BL02RN2R62T4	COIL	3	
⚠ L701	RLQZ271M	COIL	1	
L702-06	BL02RN2R62T4	COIL	5	
L711	ELEXT101KA9	COIL	1	
P1	RPG3196	PACKING CASE(AMPLI./DECK)	2	
P1	RPG3529	PACKING CASE(CD/TUNER)	2	
P2	RPN0970-3	CUSHION(AMPLIFIER/DECK)	2	
P2	RPN0971-3	CUSHION(CD/TUNER)	2	
P3	SPP740	PROTECTION BAG(UNIT)	4	
P4	RPG3835	PACKING CASE(SYSTEM)	1	(E)
P4	RPG3836	PACKING CASE(SYSTEM)	1	(EG)
P4	RPG3958	PACKING CASE(SYSTEM)	1	(EB)
P4	RPG3961	PACKING CASE(SYSTEM)	1	(EP)
P5	RPQ0771	PAD	1	
P6	RPF0139	PROTECTION BAG(F.B.)	1	
⚠ PT701	RTP2M5B011	POWER TRANSFORMER	1	
Q301,02	2SC3312RSTA	TRANSISTOR	2	
Q303,04	2SD2144STA	TRANSISTOR	2	
Q305	UN4115TA	TRANSISTOR	1	
Q307,08	2SD2144STA	TRANSISTOR	2	
Q309	UN4115TA	TRANSISTOR	1	
Q501-04	2SB792RSTTX	TRANSISTOR	4	
Q505-08	IRFI510G	TRANSISTOR	4	
Q551,52	2SB792RSTTX	TRANSISTOR	2	
Q553-56	2SD1819ARTX	TRANSISTOR	4	
Q557	2SB1218RTW	TRANSISTOR	1	
Q558,59	2SD1819ARTX	TRANSISTOR	2	
Q560	2SB792RSTTX	TRANSISTOR	1	
Q581,82	2SD1819ARTX	TRANSISTOR	2	
Q583	2SB1218RTW	TRANSISTOR	1	
Q584	2SD1819ARTX	TRANSISTOR	1	
Q591	2SB792RSTTX	TRANSISTOR	1	
Q711	2SC3311AIRTA	TRANSISTOR	1	
⚠ Q721	2SD2137PQTA	TRANSISTOR	1	
Q801-03	UN4111	TRANSISTOR	3	
R301	ERDS2FJ103	1/4W 10K	1	
R302	ERDS2TJ103	1/4W 10K	1	
R303,04	ERDS2FJ103	1/4W 10K	2	
R305,06	ERDS2FJ224	1/4W 220K	2	
R307,08	ERDS2FJ392	1/4W 3.9K	2	
R309,10	ERDS2TJ223T	1/4W 22K	2	
R311,12	ERDS2TJ102	1/4W 1K	2	
R313,14	ERDS2FJ392	1/4W 3.9K	2	
R315,16	ERDS2TJ223T	1/4W 22K	2	
R317,18	ERDS2FJ392	1/4W 3.9K	2	
R319,20	ERDS2FJ183	1/4W 18K	2	
R321,22	ERDS2FJ392	1/4W 3.9K	2	
R323	ERDS2TJ561T	1/4W 560	1	
R325,26	ERDS2TJ152T	1/4W 1.5K	2	
R327,28	ERDS2TJ562	1/4W 5.6K	2	
R329,30	ERDS2TJ104	1/4W 100K	2	
R332	ERDS2TJ222	1/4W 2.2K	1	
R333,34	ERDS2TJ122T	1/4W 1.2K	2	
R335,36	ERDS2TJ121T	1/4W 120	2	
R337	ERDS2FJ224	1/4W 220K	1	
R341,42	ERDS2TJ471T	1/4W 470	2	
R343,44	ERDS2TJ333T	1/4W 33K	2	
R345,46	ERDS2TJ122T	1/4W 1.2K	2	
R347,48	ERDS2TJ332T	1/4W 3.3K	2	
R349-52	ERDS2FJ470	1/4W 47	4	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R353,54	ERDS2TJ121T	1/4W 120	2	
R355	ERDS2TJ334T	1/4W 330K	1	
R356	ERDS2FJ222	1/4W 2.2K	1	
R361	ERDS2TJ273T	1/4W 27K	1	
R371,72	ERDS2TJ562	1/4W 5.6K	2	
R373,74	ERDS2TJ332T	1/4W 3.3K	2	
R381,82	ERDS2FJ392	1/4W 3.9K	2	
R501,02	ERJ6GEYJ472V	1/10W 4.7K	2	
R503,04	ERJ6GEYJ824V	1/10W 820K	2	
R505,06	ERJ6GEYJ103V	1/10W 10K	2	
R507	ERJ6GEYJ301V	1/10W 300	1	
R508	ERJ6GEYJ241V	1/10W 240	1	
R509,10	ERJ6GEY0R00Z	1/10W 0	2	
R511,12	ERJ6GEYJ153V	1/10W 15K	2	
R513-16	ERJ6GEYJ562V	1/10W 5.6K	4	
R517-20	ERJ6GEYJ1R0V	1/10W 1	4	
R523,24	ERJ6GEYJ473V	1/10W 47K	2	
R525	ERJ6GEYJ273V	1/10W 27K	1	
R526	ERJ6GEYJ153V	1/10W 15K	1	
R541	ERJ6GEYJ105V	1/10W 1M	1	
R544	ERJ6GEYJ221V	1/10W 220	1	
R551,52	ERJ6GEYJ181V	1/10W 180	2	
R553,54	ERJ6GEYJ392V	1/10W 3.9K	2	
R555,56	ERF2EXKR22V	2W 0.22	2	
R557,58	ERJ6GEYJ103V	1/10W 10K	2	
R559	ERJ6GEYJ153V	1/10W 15K	1	
R561	ERJ6GEYJ152V	1/10W 1.5K	1	
R562	ERJ6GEYJ153V	1/10W 15K	1	
R563	ERJ6GEYJ473V	1/10W 47K	1	
R564,65	ERJ6GEYJ103V	1/10W 10K	2	
R566	ERJ6GEYJ222V	1/10W 2.2K	1	
R567,68	ERJ6GEYJ153V	1/10W 15K	2	
R569	ERJ6GEYJ473V	1/10W 47K	1	
R570	ERJ6GEYJ103V	1/10W 10K	1	
R571	ERJ6GEYJ102Z	1/10W 1K	1	
R572	ERJ6GEYJ103V	1/10W 10K	1	
R573	ERJ6GEYJ472V	1/10W 4.7K	1	
R574	ERJ6GEYJ103V	1/10W 10K	1	
R575	ERJ6GEYJ105V	1/10W 1M	1	
R581	ERJ6GEYJ124V	1/10W 120K	1	
R582	ERJ6GEYJ823V	1/10W 82K	1	
R583	ERJ6GEYJ563V	1/10W 56K	1	
R584	ERJ6GEYJ564V	1/10W 560K	1	
R585	ERJ6GEYJ223V	1/10W 22K	1	
R586	ERJ6GEYJ103V	1/10W 10K	1	
R587	ERDS2TJ473T	1/4W 47K	1	
R591,92	ERJ6GEYJ102Z	1/10W 1K	2	
R593	ERJ6GEYJ473V	1/10W 47K	1	
R594	ERJ6GEYJ223V	1/10W 22K	1	
⚠ R701,02	ERDS1FJ182	1/2W 1.8K	2	
⚠ R703	ERDS1FJ392	1/2W 3.9K	1	
⚠ R704	ERQ16NKW1R0E	1/6W 1	1	
R711	ERG1SJ221	1W 220	1	
R712	ERG1SJ271	1W 270	1	
R713	ERDS2TJ333T	1/4W 33K	1	
R714	ERDS2FJ392	1/4W 3.9K	1	
R715	ERDS2TJ473T	1/4W 47K	1	
R721	ERG2SJ331	2W 330	1	
R722	ERDS2FJ222	1/4W 2.2K	1	
R731,32	ERDS2TJ221T	1/4W 220	2	
R741,42	ERDS2FJ102	1/4W 1K	2	
R751-53	ERDS2FJ101	1/4W 100	3	
R801	ERDS2TJ821T	1/4W 820	1	
R802	ERDS2FJ102	1/4W 1K	1	
R803	ERDS2TJ271T	1/4W 270	1	
R805	ERDS2FJ472	1/4W 4.7K	1	
R807	ERDS2TJ331T	1/4W 330	1	
R808	ERDS2FJ104	1/4W 100K	1	
R810	ERDS2TJ331T	1/4W 330	1	
⚠ RL701	RSY0013M-0	RELAY	1	
S801-03	EVQPTD05Q	SW	3	
VR301,02	EVJYA1F04C15	V.R	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
VR303	EVJ02QF04G15	V.R	1	
VR801	EVQWQAF2524B	V.R	1	
X501	EF0EC2405T4	OSCILLATOR	1	

Cabinet Parts Location


①
②
③
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⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫
⑬
⑭
⑮
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⑱
⑲
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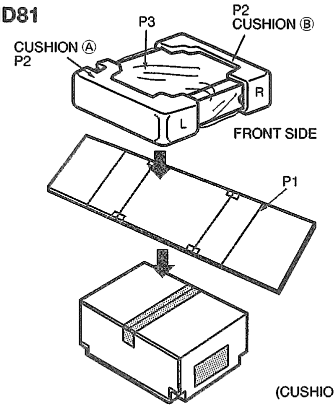
㉛
㉜
㉝
㉞
㉟
㊱
㊲
※
a
b
c
d
e
f
g
h
i
j
CN504
W701
CN801
CP716
CP717
CP718
FC2
FC1
JK701
JK501
JK201
CP715
※(E701)
CN503
CN716
CN717
CN718
CN715
W503
CP502
CP501
FC4
FC3
FC6
FC5
CN701
~
CN708
CN709
CN710
CN711
Power
Transformer
(PT701)
W802
CN802
CN301
JK301
CP301
W504
W803
CN502
CN501

※ : Not supplies.

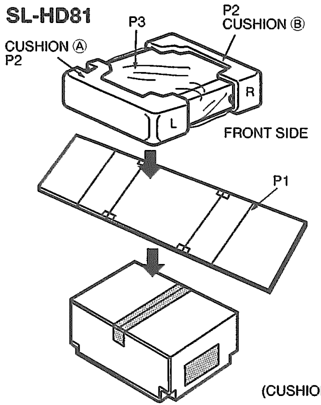
Packaging

Tuner: ST-HD81


P3
P2
CUSHION Ⓑ
CUSHION Ⓐ
P2
R
L
FRONT SIDE
P1

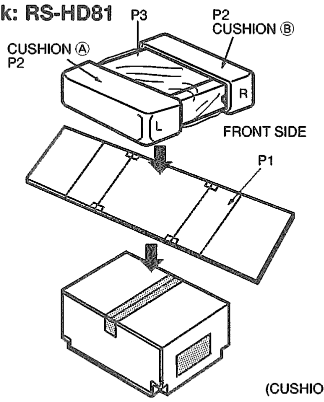
(CUSHION Ⓐ,Ⓑ: RPN0971-3)

CD Changer: SL-HD81


P3
P2
CUSHION Ⓑ
CUSHION Ⓐ
P2
R
L
FRONT SIDE
P1

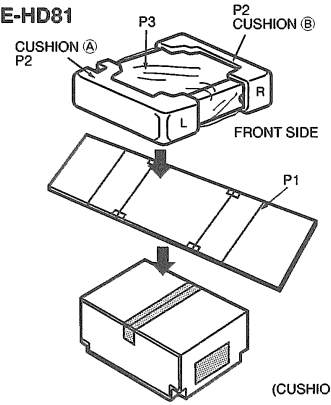
(CUSHION Ⓐ,Ⓑ: RPN0971-3)

Cassette deck: RS-HD81

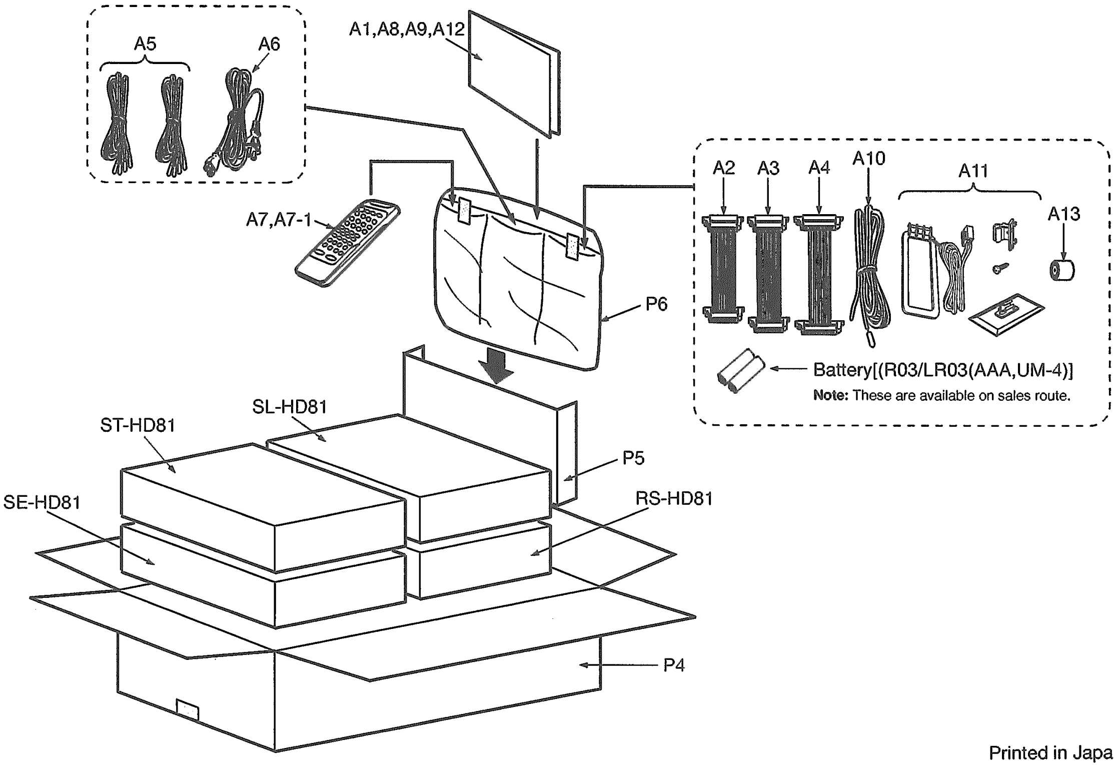

P3
P2
CUSHION Ⓑ
CUSHION Ⓐ
P2
R
L
FRONT SIDE
P1

(CUSHION Ⓐ,Ⓑ: RPN0970-3)

Amplifier: SE-HD81


P3
P2
CUSHION Ⓑ
CUSHION Ⓐ
P2
R
L
FRONT SIDE
P1

(CUSHION Ⓐ,Ⓑ: RPN0970-3)


A5
A6
A1,A8,A9,A12
A7,A7-1
P6
A2
A3
A4
A10
A11
A13
Battery[(R03/LR03(AAA,UM-4)]
SL-HD81
ST-HD81
SE-HD81
P5
RS-HD81
P4

Note: These are available on sales route.

Printed in Japan
H980206350 TN/HH

ORDER NO. AD9802027C2

Service Manual

CD Changer

Compact Disc Changer

SL-HD81

COMPACT disc DIGITAL AUDIO

MASH*1
multi-stagenoiseshaping

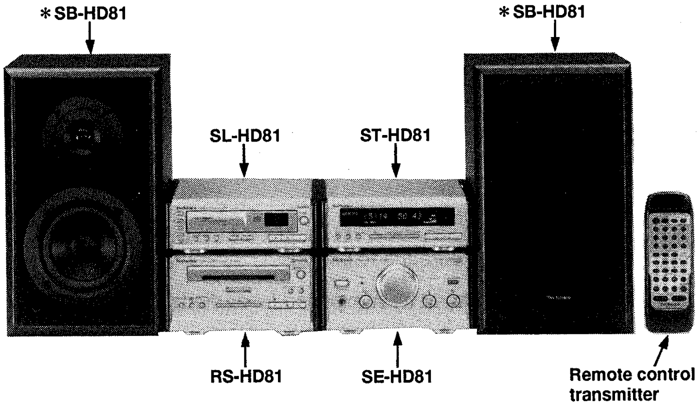
※ MASH is a trademark of NTT.

Colour

(N) .... Gold Type

Area

E .... Europe.



System: SC-HD81

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

RAE0161Z Mechanism Series

Specifications

Audio
DA converter: 1 bit 2 DAC MASH※

Pickup
Wavelength: 780 nm

General
Dimensions : 196(Wide)/ 67(High)/ 229(Depth) mm
Weight: 1.7 kg

Notes:
1. Weight and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.

System/SC-HD81:
Tuner: ST-HD81, Compact Disc Changer: SL-HD81, Amplifier: SE-HD81, Cassette Deck: RS-HD81, Speakers: SB-HD81
Notes: *......Made in PAES

⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics®

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Loading Mechanism Parts Location 50

NOTES:

- Refer to the service manual for Model No. ST-HD81 (ORDER No. AD9802026C2) for information on "Installation " and "Connections".
- Refer to the service manual for Model No. SE-HD81 (ORDER No. AD9802028C2) for information on "Accessories".

Precaution of Laser Diode

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.

Wave length: 780 nm
Maximum output radiation power from pickup: 100 μW/VDE

Laser radiation from the pickup lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

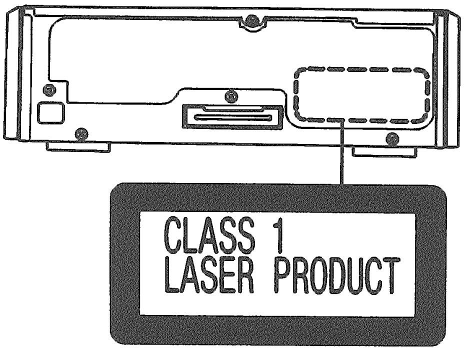
ACHTUNG: Dieses Produkt enthält eine Laserdiode. Im eingeschalteten Zustand wird unsichtbare Leserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm
Maximale Strahlungsleistung der Lasereinheit: 100 μW/VDE

Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

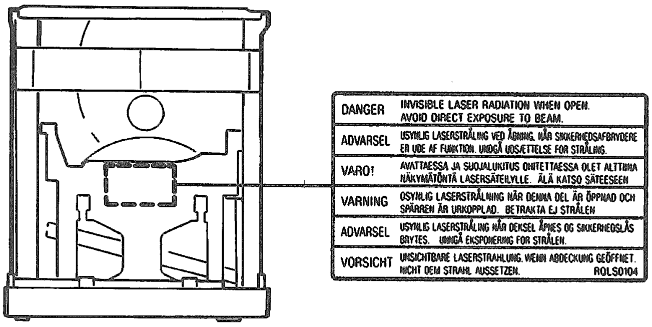
1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinhit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlines blicken.

Back side


CLASS 1
LASER PRODUCT

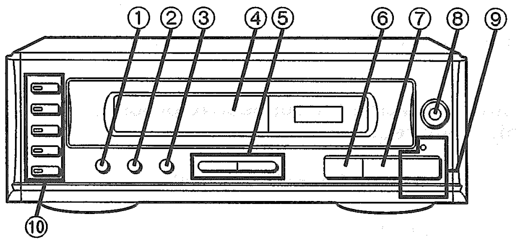
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

Upper side


DANGER
INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.
ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN
ADVARSEL
USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT
UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
RQLS0104

CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

Location of Control


①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩

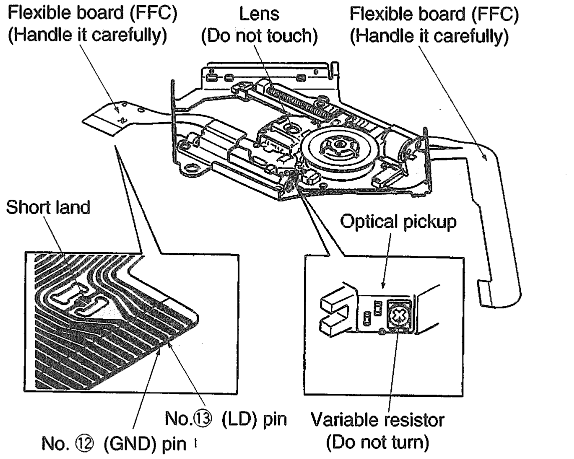
① **Random play button (RANDOM)**
② **Repeat button (REPEAT)**
③ **AI edit button (AI EDIT)**
④ **Disc tray**
⑤ **Skip/search buttons (⏮/⏪, ⏩/⏭)**
⑥ **Stop button (■)**
⑦ **Pause button (❚❚)**
⑧ **Disc tray open/close button (⏏ OPEN/CLOSE)**
⑨ **Play button and indicator (▶)**
⑩ **Disc select buttons and indicators (DISC)**

Handling Precautions for Traverse Deck

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

● Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. The short land between the No. ⑫ (GND) and No. ⑬ (LD) pins on the flexible board is shorted with a solder build-up to prevent damage to the laser diode.
   To connect to the PC board, be sure to open by removing the solder build-up, and finish the work quickly.
3. Take care not to apply excessive stress to the flexible board (FFC).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

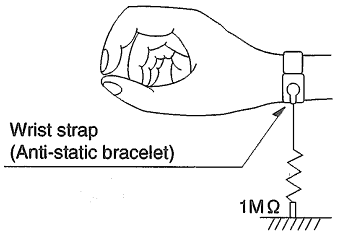

Flexible board (FFC)
(Handle it carefully)
Lens
(Do not touch)
Flexible board (FFC)
(Handle it carefully)
Short land
Optical pickup
No.⑬ (LD) pin
No. ⑫ (GND) pin
Variable resistor
(Do not turn)

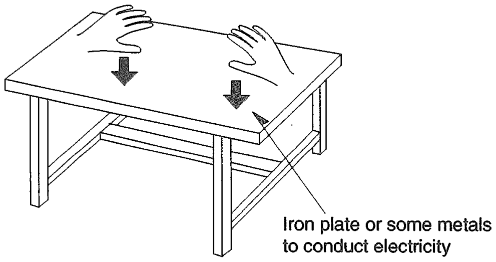
● Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).


Wrist strap
(Anti-static bracelet)
1MΩ


Iron plate or some metals
to conduct electricity

Operation Checks and Main Component Replacement Procedures

NOTE

1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **Select items from the following index when checks or replacement are required.**
4. **Refer the parts No. on the page of "Main Component Replacement Procedures", if necessary.**

• Contents

- **Checking Procedures for each P.C.B.**

page.
1. Checking for the main P.C.B. and operation P.C.B.. •• 5~8.
2. Checking for the traverse deck separated from the loading unit. •••••••••••••••••••••••••••••••••• 9.

- **Main Component Replacement Procedures**

1. Replacement for the traverse deck and spindle motor ass'y. ••••••••••••••••••••••••••••••••• 10,11.
2. Replacement for the loading motor. •• 11,12.

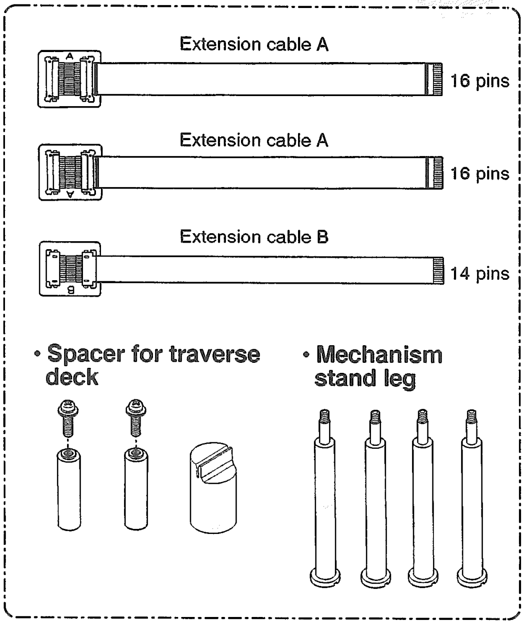
- **Loading unit component disassembly/reassembly**

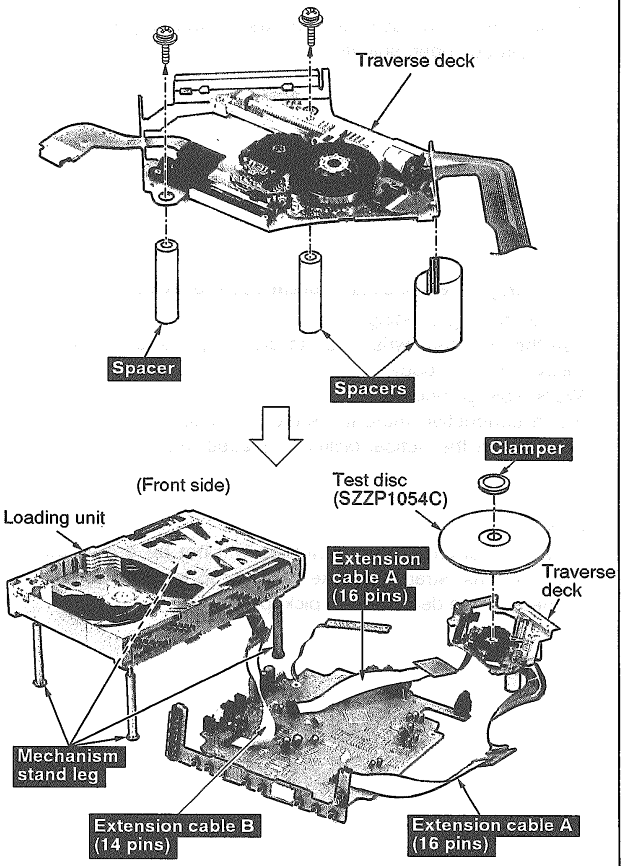
1. Loading unit component disassembly. •• 12~16.
2. Loading unit component reassembly.• •• 17~23.
3. Manual operation check of loading components. ••••••••••••••••••••••••••••••••••••••• 23,24.

Preparation

- For checking the P.C.B., following service kit should be prepared.

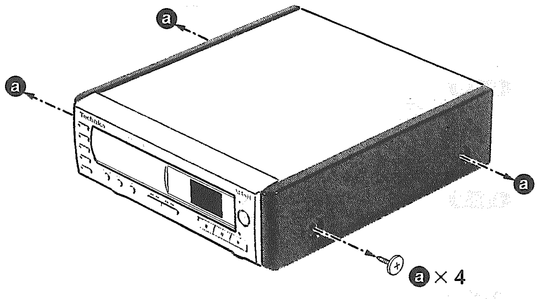
- **Service kit No. RFKZ0078** (• Extension cable × 3 • Spacer for traverse deck • Mechanism stand leg)


Extension cable A
16 pins
Extension cable A
16 pins
Extension cable B
14 pins
• Spacer for traverse deck
• Mechanism stand leg

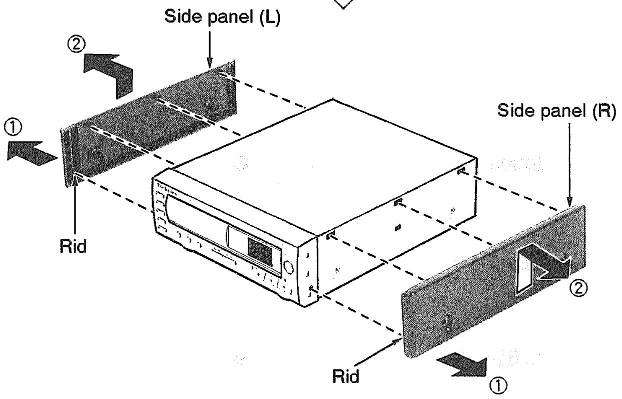

Traverse deck
Spacer
Spacers
Clamper
(Front side)
Test disc (SZZP1054C)
Loading unit
Extension cable A (16 pins)
Traverse deck
Mechanism stand leg
Extension cable B (14 pins)
Extension cable A (16 pins)

Checking procedures for each P.C.B.

Checking for the main P.C.B. and operation P.C.B.

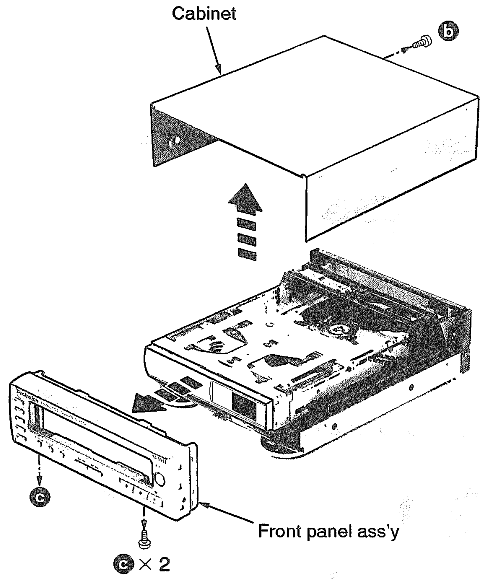


Step 1 Remove the 4 screws (ⓐ).


Side panel (L)
②
①
Rid
Side panel (R)
②
Rid
①

Step 2 Remove the side panel (L),(R).

(• Spread the lower part of the side panels in the direction of arrow (➡①) to release the ribs, and then lift to remove the side panels (➡②).)

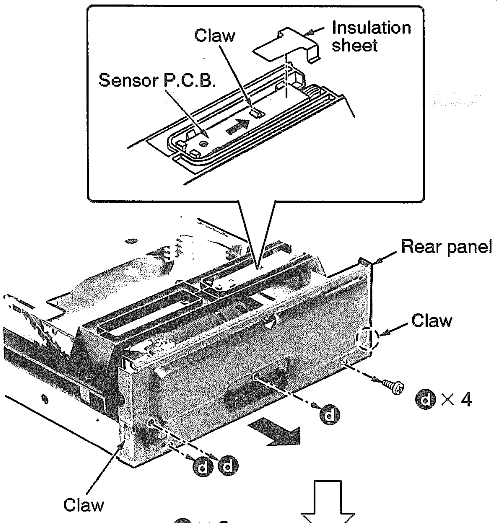

Cabinet
ⓑ
ⓒ
Front panel ass'y
ⓒ × 2

Step 3 Remove the 1 screw (ⓑ).

Step 4 Remove the cabinet.

Step 5 Remove the 2 screws (ⓒ).

Step 6 Pull out the front panel ass'y.

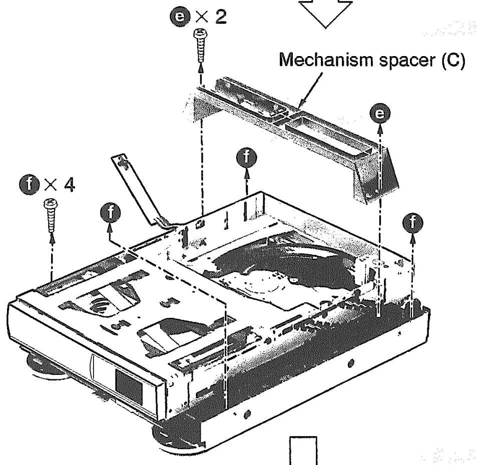

Claw
Insulation sheet
Sensor P.C.B.
Rear panel
Claw
ⓓ × 4
ⓓ
ⓓ ⓓ
Claw

Step 7 Remove the insulation sheet.

Step 8 Release the claw, and then remove the sensor P.C.B..

Step 9 Remove the 4 screws (ⓓ).

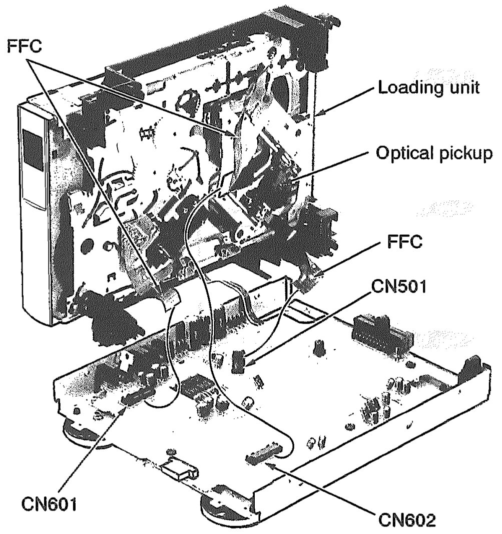
Step 10 Release the 2 claws, and then remove the rear panel.


ⓔ × 2
Mechanism spacer (C)
ⓔ
ⓕ × 4
ⓕ
ⓕ
ⓕ

Step 11 Remove the 2 screws (ⓔ).

Step 12 Remove the mechanism spacer (C).

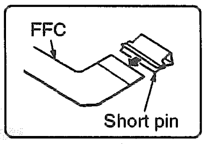
Step 13 Remove the 4 screws (ⓕ).


FFC
Loading unit
Optical pickup
FFC
CN501
CN601
CN602

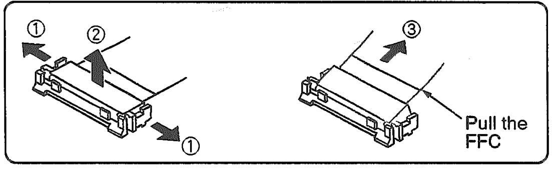
Step 14 Lift up the loading unit, and then remove the FFC.

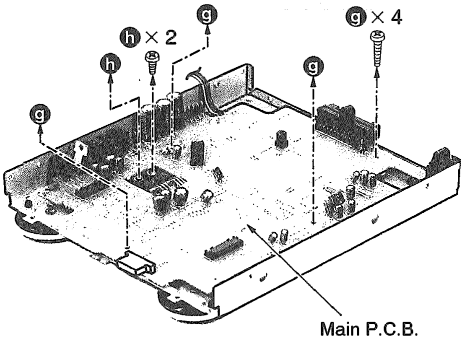
NOTE

Install a short pin into the optical pickup FFC.


FFC
Short pin

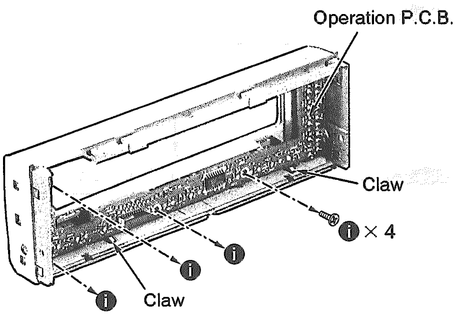
Removal of the FFC


①
②
①
③
Pull the FFC



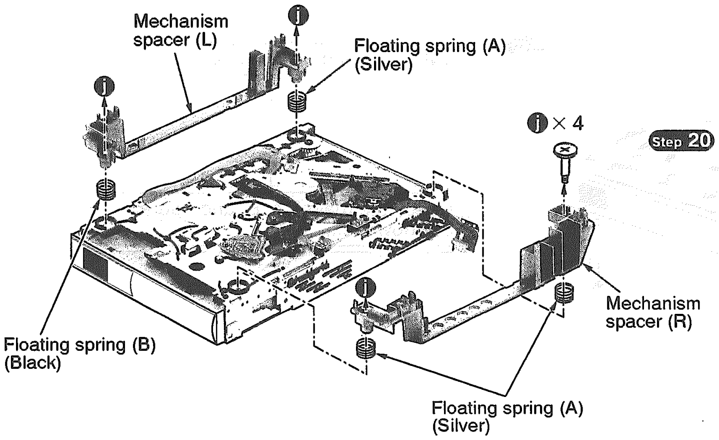
Step 15 Remove the 6 screws (ⓖ, ⓗ).

Step 16 Remove the main P.C.B..


Operation P.C.B.
Claw
ⓘ × 4
ⓘ
ⓘ
ⓘ
Claw

Step 17 Remove the 4 screws (ⓘ).

Step 18 Release the 2 claws, and then remove the operation P.C.B..


Mechanism spacer (L)
ⓙ
Floating spring (A) (Silver)
ⓙ
ⓙ × 4
ⓙ
Mechanism spacer (R)
Floating spring (B) (Black)
Floating spring (A) (Silver)

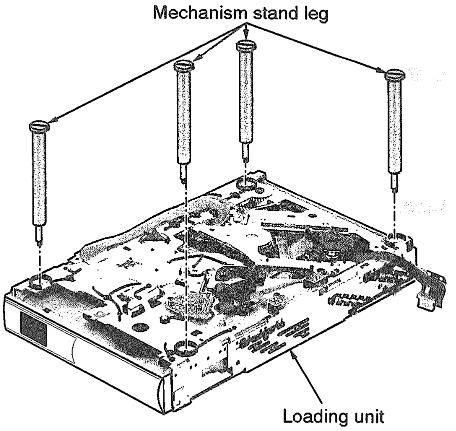
Step 19 Remove the 4 screws (ⓙ).

Step 20 Remove the mechanism spacer (L), mechanism spacer (R), floating spring (A) and floating spring (B).

NOTE

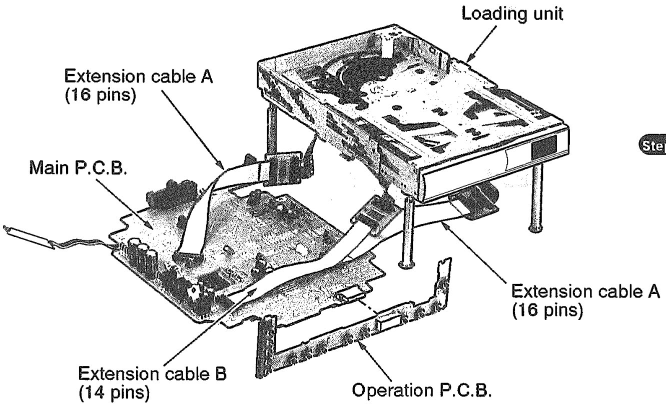
- Take care not lose the floating spring (A) and (B).

Step 21 Install the mechanism stand leg to the loading unit.


Mechanism stand leg
Loading unit

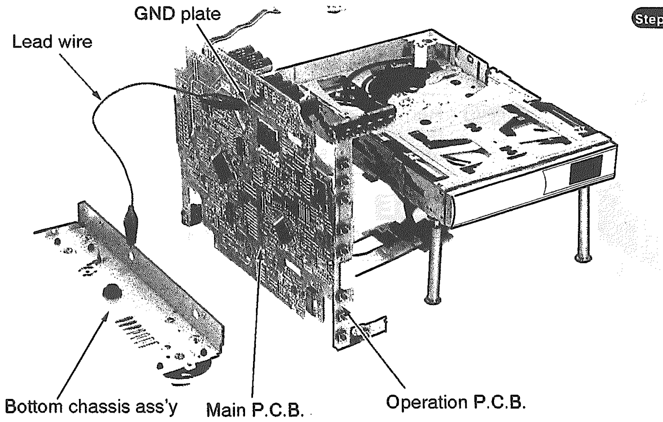
Step 22 Connect the extension cables between the FFCs and connectors.

Step 23 Install the operation P.C.B. to the main P.C.B..


Loading unit
Extension cable A
(16 pins)
Main P.C.B.
Extension cable A
(16 pins)
Extension cable B
(14 pins)
Operation P.C.B.

Step 24 Connect the lead wire between the GND plate and bottom chassis ass'y.

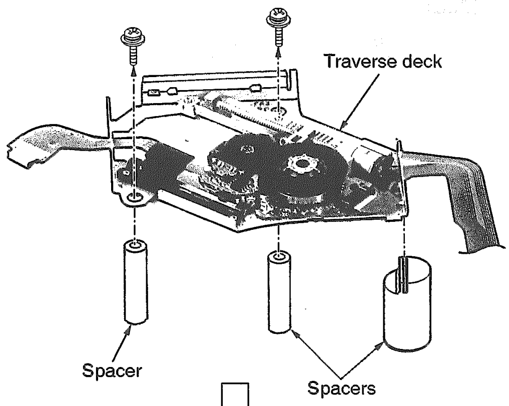
Check the main P.C.B. and operation P.C.B. as shown left.


GND plate
Lead wire
Bottom chassis ass'y
Main P.C.B.
Operation P.C.B.

Checking for the traverse deck separated from the loading unit.

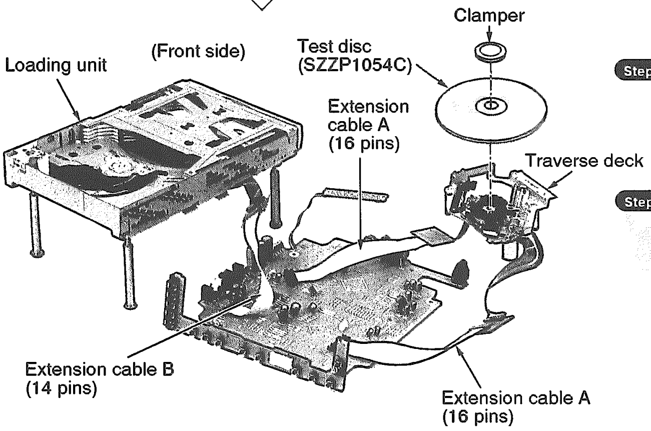
Follow the traverse deck replacing procedures (**Step 1** ~ **Step 5**) on the main components replacement procedures. (See pages 10 and 11.)

Step 1 Install the spacers (3 points) to the traverse deck.


Traverse deck
Spacer
Spacers

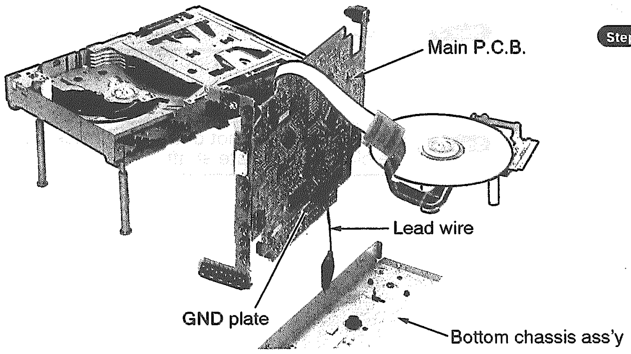
Step 2 Connect the extension cables between the FFCs and connectors.

Step 3 Install the test disc to the traverse deck and fix it with clamper.


Clamper
Loading unit
(Front side)
Test disc
(SZZP1054C)
Extension
cable A
(16 pins)
Traverse deck
Extension cable B
(14 pins)
Extension cable A
(16 pins)

Step 4 Connect the lead wire between the GND plate and bottom chassis ass'y.

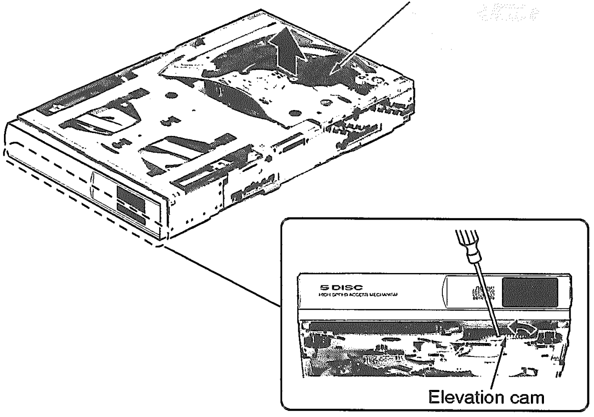
Check the main P.C.B. and operation P.C.B. as shown left.


Main P.C.B.
Lead wire
GND plate
Bottom chassis ass'y

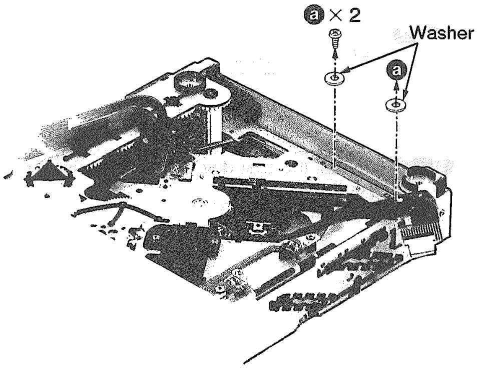
Main Component Replacement Procedures

Replacement for the traverse deck and spindle motor ass'y.

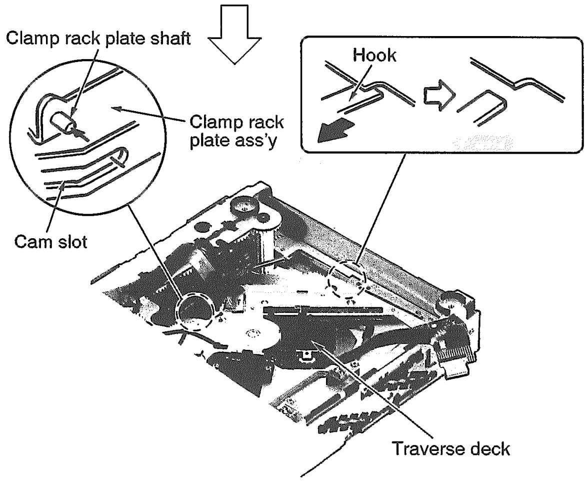
Follow the items (Step 1 ~ Step 5) of main P.C.B. checking. (See page 5.)


Elevation block ass'y
5DISC
Elevation cam

Step 1 Rotate the elevation cam in the direction of arrow (counterclockwise), and then rise the elevation block ass'y.

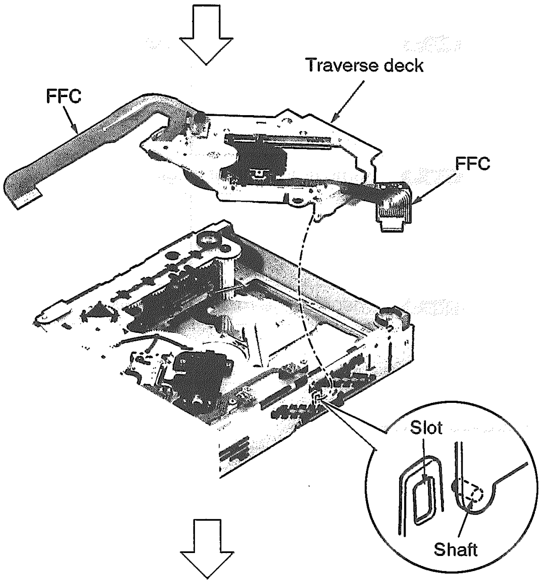


Step 2 Remove the 2 screws (ⓐ) and 2 washers.


Clamp rack plate shaft
Hook
Clamp rack plate ass'y
Cam slot
Traverse deck

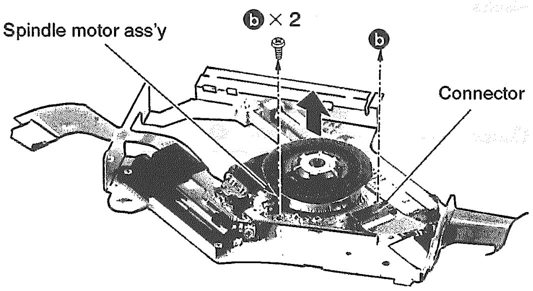
Step 3 Release the hook of traverse deck.

Step 4 Release the cam slot of traverse deck from the clamp rack plate shaft.


Traverse deck
FFC
FFC
Slot
Shaft

Step 5 Release the traverse deck shaft from the slot, and then remove the traverse deck.

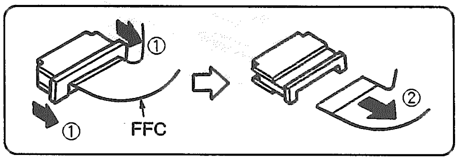
NOTE
Take care not to damage the FFC.


Spindle motor ass'y
ⓑ × 2
ⓑ
Connector

Step 6 Remove the 2 screws (ⓑ).

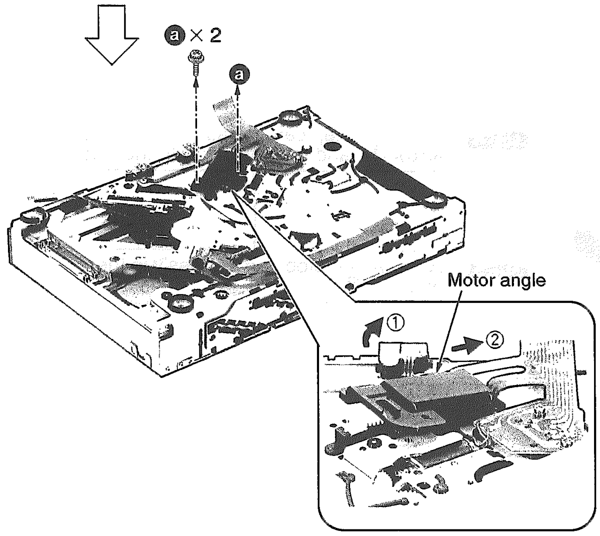
Step 7 Detach the connector, and then remove the spindle motor ass'y.

Remove of the connector



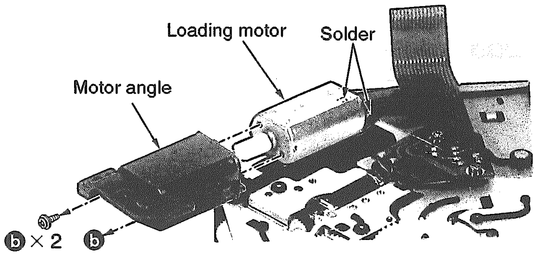
Replacement for the loading motor.

Follow the items (Step 1 ~ Step 5) of main P.C.B. checking. (See page 5.)


ⓐ × 2
ⓐ
Motor angle
①
②

Step 1 Remove the 2 screws (ⓐ).

Step 2 Lift the motor angle in the direction of arrow ①, and then remove it with pushing in the direction of arrow ②.


Loading motor
Solder
Motor angle
ⓑ × 2
ⓑ

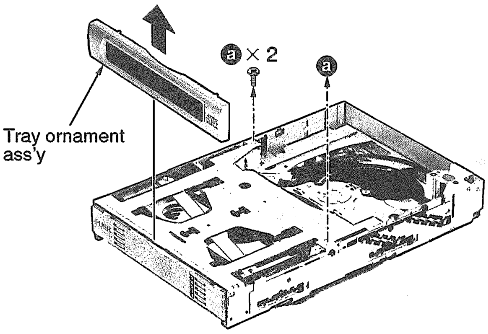
Step 3 Remove the 2 screws (ⓑ).

Step 4 Remove the motor angle.

Step 5 Unsolder the motor terminals (2 points).

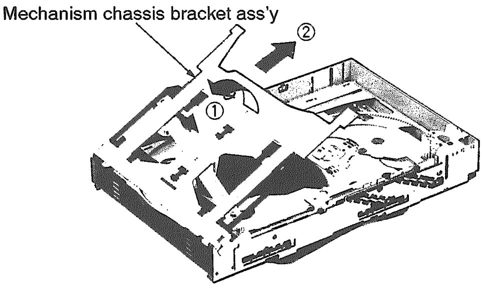
■ Loading unit component disassembly/reassembly

Loading unit component disassembly

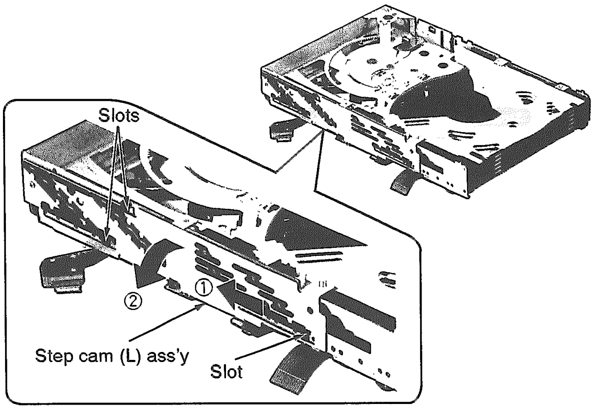

ⓐ × 2
ⓐ
Tray ornament ass'y

Step 1 Remove the tray ornament ass'y in the direction of arrow.

Step 2 Remove the 2 screws (ⓐ).

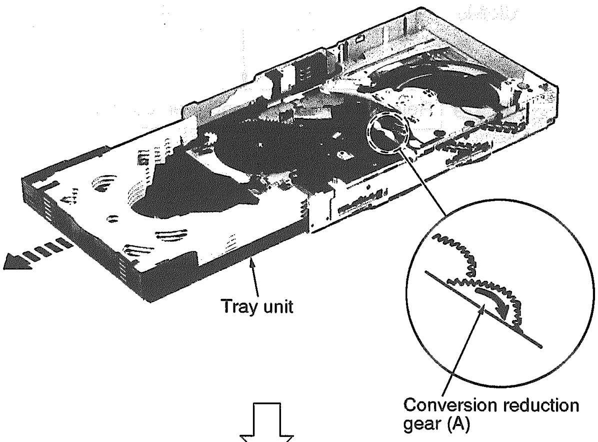

Mechanism chassis bracket ass'y
②
①

Step 3 Lift the mechanism chassis bracket ass'y in the direction of arrow ①, and them remove it in the direction of arrow ②.


Slots
②
①
Step cam (L) ass'y
Slot

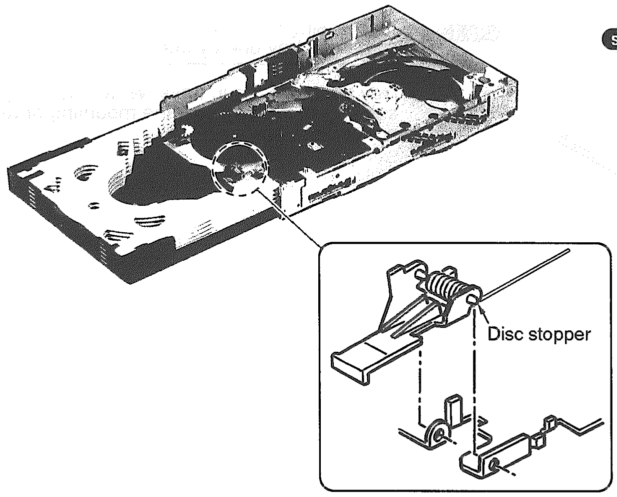
Step 4 Move the step cam (L) ass'y in the direction of arrow ①, and then align it with the slots.

Step 5 Remove the step cam (L) ass'y in the direction of arrow ②.

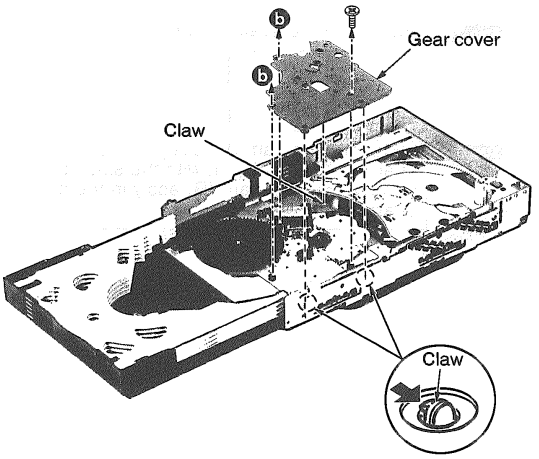

Tray unit
Conversion reduction gear (A)

Step 6 Rotate the conversion reduction gear (A) in the direction of arrow (clockwise).

Step 7 Slide the tray base toward the front. then, pull the tray unit fully.

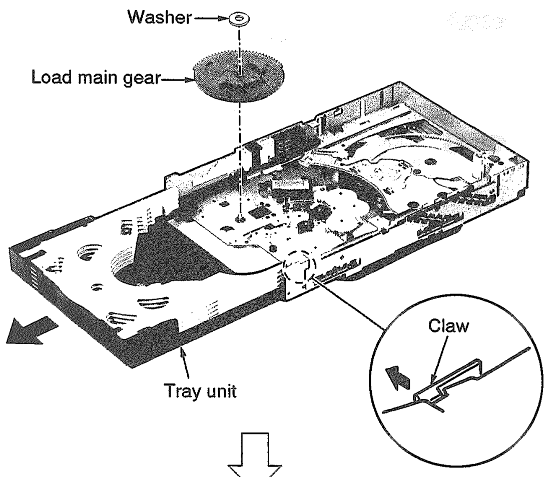

Disc stopper

Step 8 Remove the disc stopper.


ⓑ × 3
ⓑ
ⓑ
Gear cover
Claw
Claw

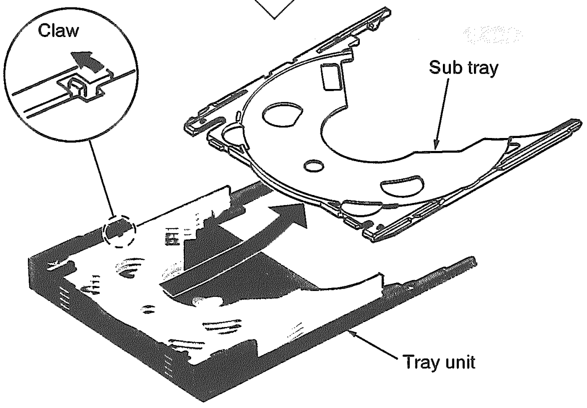
Step 9 Remove the 3 screws (ⓑ).

Step 10 Release the 3 claws, and then remove the gear cover.


Washer
Load main gear
Claw
Tray unit

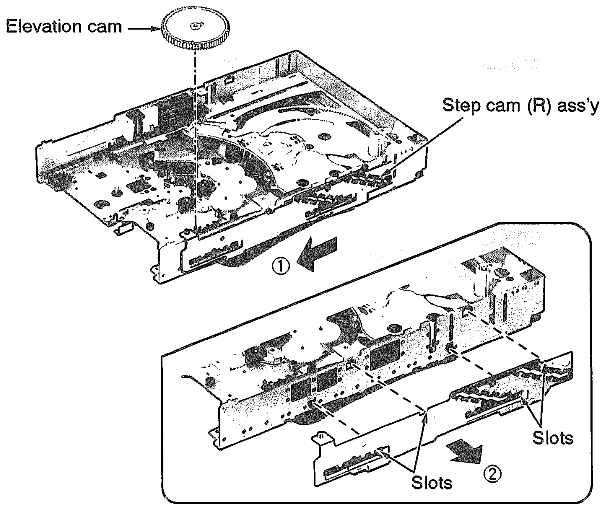
Step 11 Remove the washer and load main gear.

Step 12 Release the 1 claw, and then pull the tray unit.


Claw
Sub tray
Tray unit

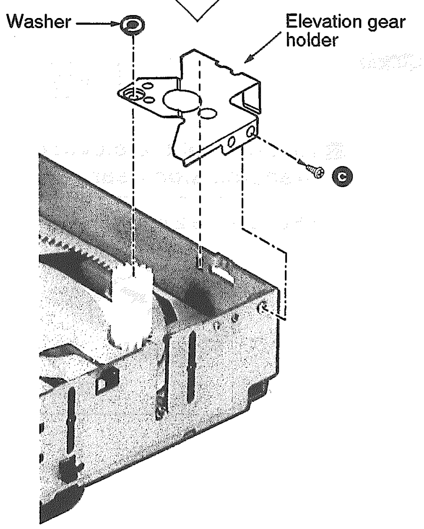
Step 13 With pressing the claw in the direction of arrow, pull the sub tray one by one.

- Tray base has 5 sub trays. When mounting the sub tray to the tray unit, the mounting order is not cared.


Elevation cam
Step cam (R) ass'y
①
Slots
Slots
②

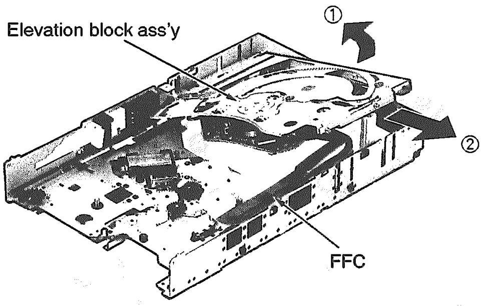
Step 14 Remove the elevation cam.

Step 15 Slide the step cam (R) ass'y in the direction of arrow ① and align it with the slots, then remove the step cam (R) ass'y in the direction of arrow ②.


Washer
Elevation gear holder
ⓒ

Step 16 Remove the 1 screw (ⓒ).

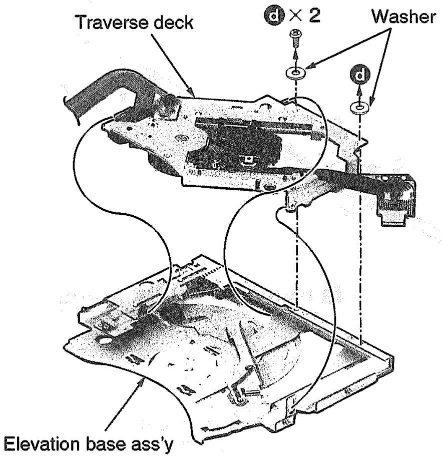
Step 17 Remove the washer and the elevation gear holder.


Elevation block ass'y
①
②
FFC

Step 18 Lift the elevation block ass'y in the direction of arrow ①, and then remove it in the direction of arrow ②.

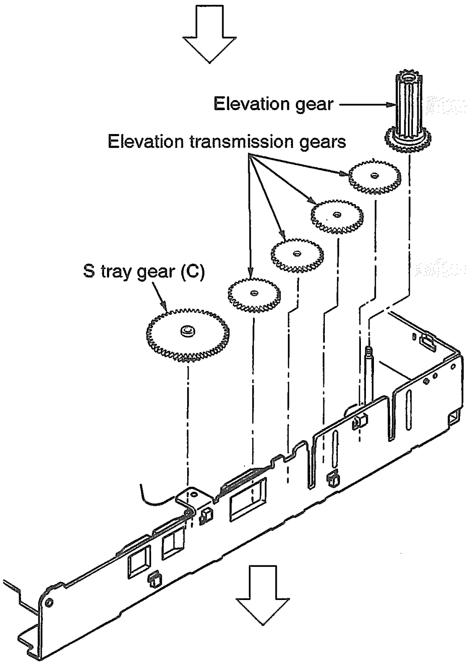
NOTE

Take care not to bend or damage the FFC.


Traverse deck
ⓓ × 2
Washer
ⓓ
Elevation base ass'y

Step 19 Remove the 2 screws (ⓓ) and 2 washers.

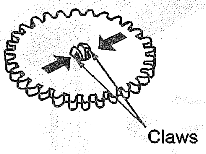
Step 20 Remove the traverse deck.


Elevation gear
Elevation transmission gears
S tray gear (C)

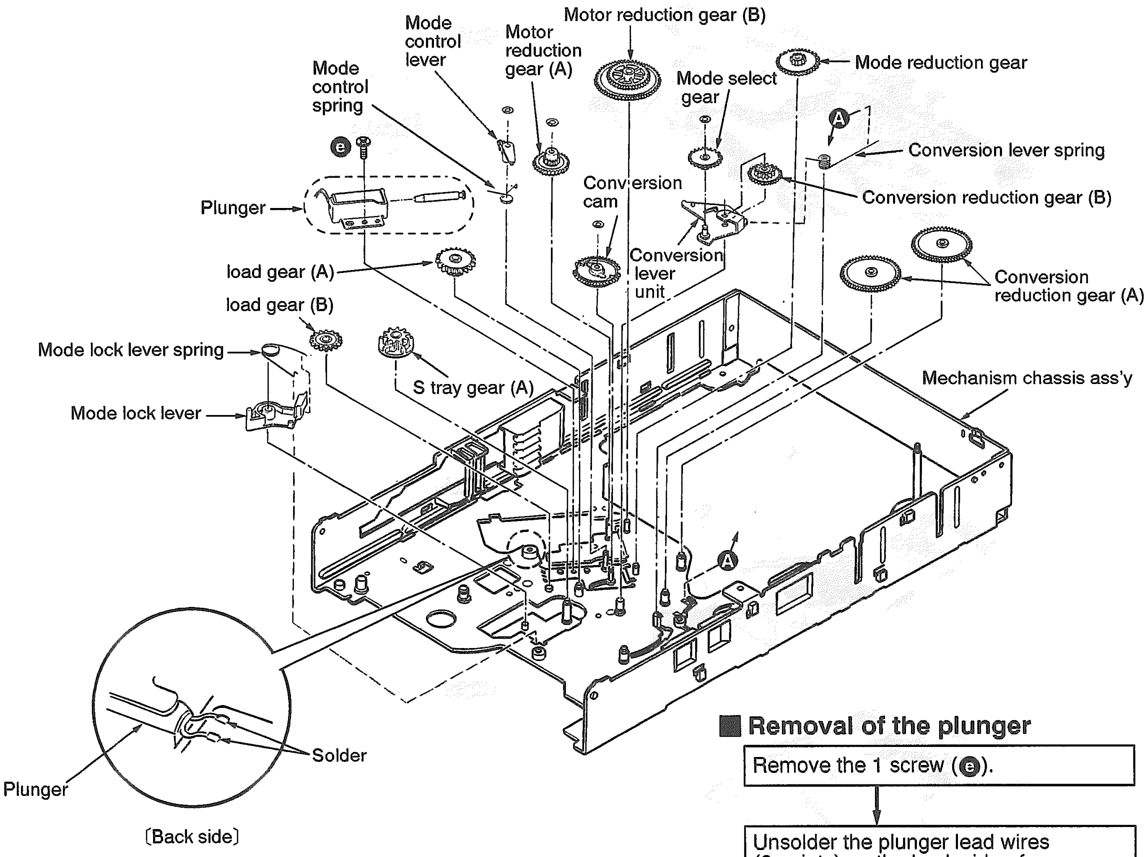
Step 21 Remove the elevation gear, elevation transmission gear and S tray gear (C).

■ Removal of the elevation transmission gear

- Release the 2 claws.



Step 22 Remove the gears, lever, spring and etc, as shown below.


Motor reduction gear (B)
Mode control lever
Motor reduction gear (A)
Mode control spring
Mode select gear
Mode reduction gear
A
Conversion lever spring
e
Conversion reduction gear (B)
Plunger
Conversion cam
Conversion lever unit
load gear (A)
load gear (B)
Conversion reduction gear (A)
Mode lock lever spring
S tray gear (A)
Mechanism chassis ass'y
Mode lock lever
A
Solder
Plunger
〔Back side〕

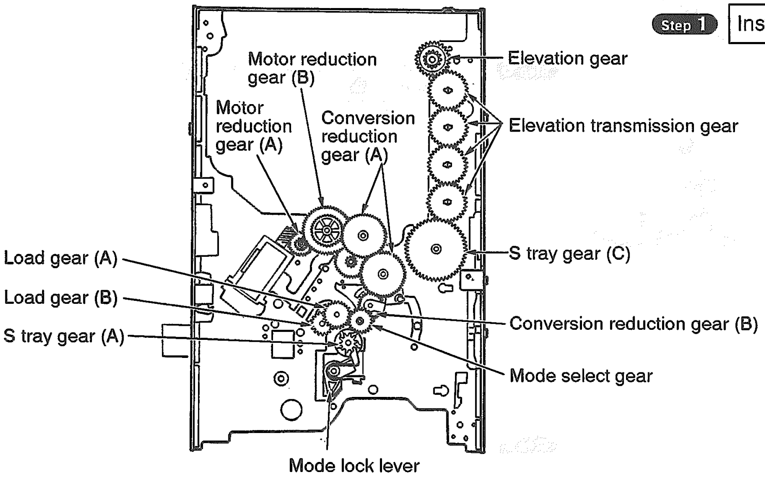
■ Removal of the plunger

Remove the 1 screw (e).

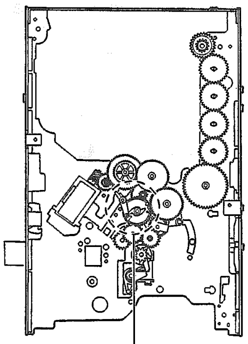
↓

Unsolder the plunger lead wires (2 points) on the back side of mechanism chassis ass'y.

Loading unit component reassembly.


Motor reduction gear (B)
Motor reduction gear (A)
Conversion reduction gear (A)
Elevation gear
Elevation transmission gear
S tray gear (C)
Load gear (A)
Load gear (B)
S tray gear (A)
Conversion reduction gear (B)
Mode select gear
Mode lock lever

Step 1 Install the gears and levers as shown left.



Step 2 Install the mode control spring to the boss A, and then align the portion ⓐ of spring with the slot. (Refer to figure 1)

Step 3 Install the conversion cam to the boss B, and then install the washer. (Refer to figure 1)

NOTE

Set the conversion cam so that the round slot is located at direction A. (Refer to figure 2)

Step 4 Install the mode control lever to the boss A. (Refer to figure 1)

NOTE

Align the portion ⓑ of mode control spring with the hook of mode control lever. (Refer to figure 1)

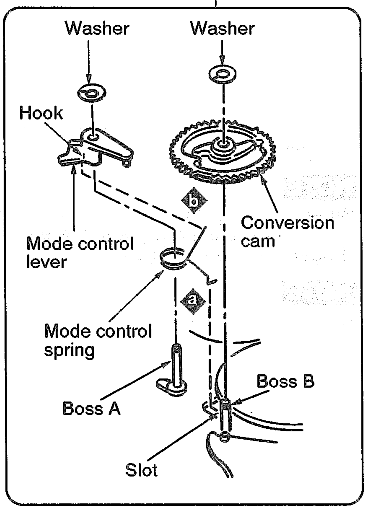

Washer
Washer
Hook
ⓑ
Conversion cam
Mode control lever
ⓐ
Mode control spring
Boss B
Boss A
Slot

Figure 1

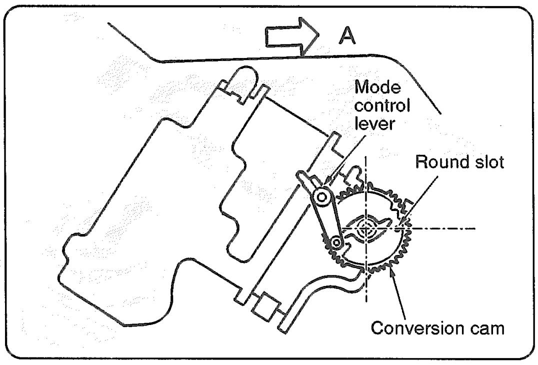
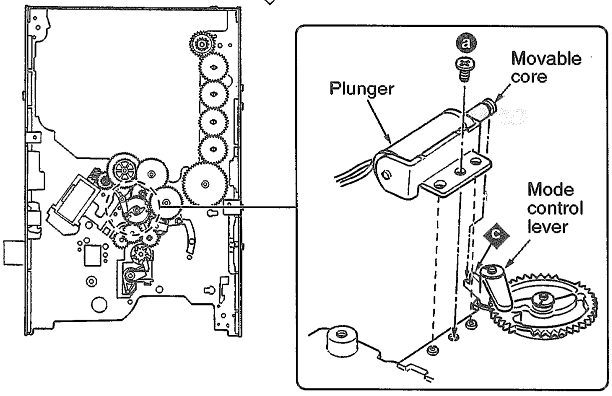
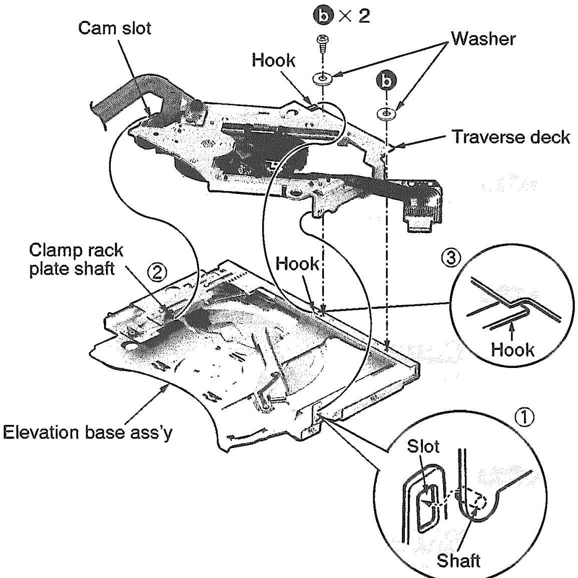

A
Mode control lever
Round slot
Conversion cam

Figure 2


ⓐ
Movable core
Plunger
Mode control lever
ⓒ

Step 5 Align the bent of movable core with the portion ⓒ of mode control lever.

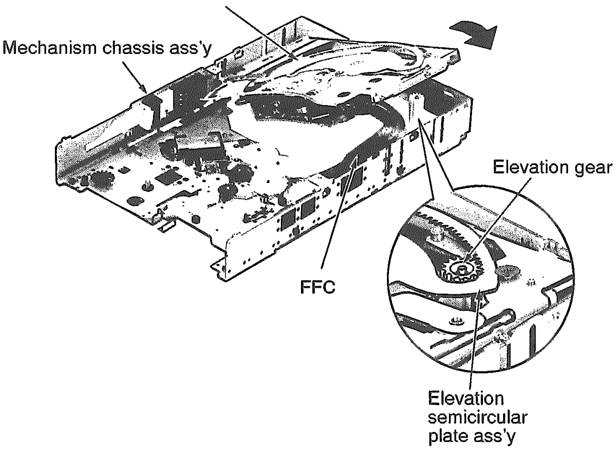
Step 6 Install the plunger, and then tighten the screw (ⓐ).


ⓑ × 2
Cam slot
Washer
Hook
ⓑ
Traverse deck
Clamp rack plate shaft
②
Hook
③
Hook
Elevation base ass'y
①
Slot
Shaft

Step 7 Install the traverse deck to the elevation base ass'y.

① Align the shaft of traverse deck with the slot.
② Align the cam slot of traverse deck with the clamp rack plate shaft.
③ Align the hook of traverse deck with the lower side of slot.

Step 8 Fix with 2 screws (ⓑ) and 2 washers.


Elevation block
Mechanism chassis ass'y
Elevation gear
FFC
Elevation semicircular plate ass'y

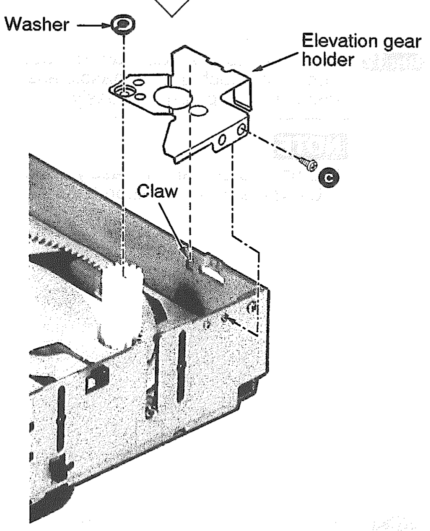
Step 9 Install the elevation block to the mechanism chassis ass'y.

NOTE

When inserting, take care to interfere the elevation semicircular plate ass'y with the elevation gear. (Engage the tooth of gear.)

NOTE

Do not pinch the FFC.


Washer
Elevation gear holder
Claw
Ⓒ

Step 10 Install the elevation gear holder.

- Assure the claw is latched.

Step 11 Install the washer, and then tighten screw (Ⓒ).

• Phase Adjustment

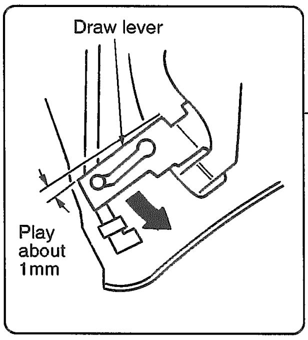
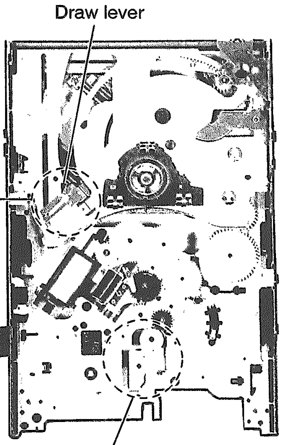

Draw lever
Play about 1mm

Figure 1



1. Locate the draw lever in the direction of arrow. (Refer to figure 1.)
2. Engage the claw of mode lock lever with the tooth of S tray gear (A). (Refer to figure 2.)
3. After engagement, the play of draw lever must be less then 1mm.
4. If the play is more than 1mm, unlock the draw lever. Then, rotate the S tray gear (A) in the direction of arrow with lifting a small amount and engage the mode lock lever with the block. (Refer to figure 2.)
5. Depending on the engagement above, select the appropriate position.

NOTE
Take care to engage the tooth of gear. (Refer to figure 3.)

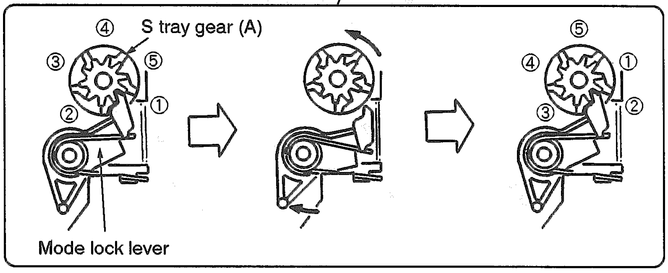

④ S tray gear (A)
③
⑤
②
①
Mode lock lever
⑤
④
①
③
②

Figure 2

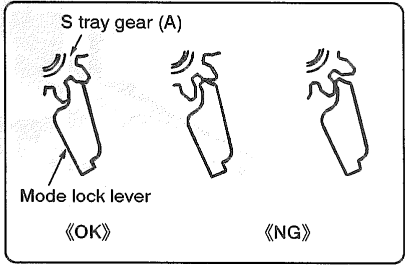
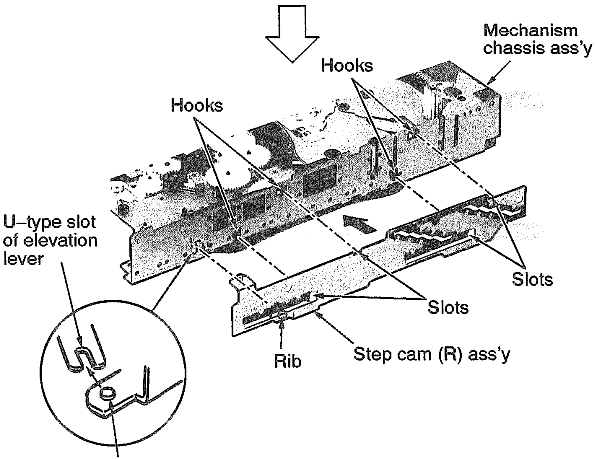

S tray gear (A)
Mode lock lever
《OK》
《NG》

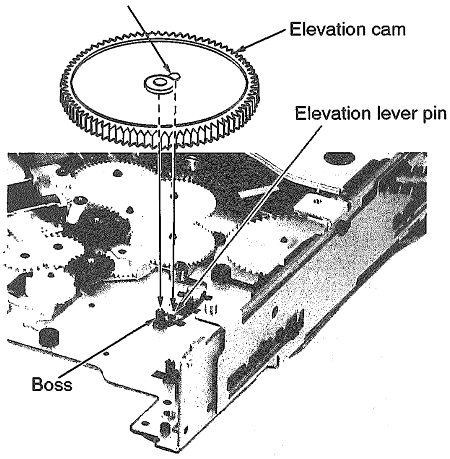
Figure 3


Mechanism chassis ass'y
Hooks
Hooks
U–type slot of elevation lever
Slots
Slots
Rib
Step cam (R) ass'y
Rib

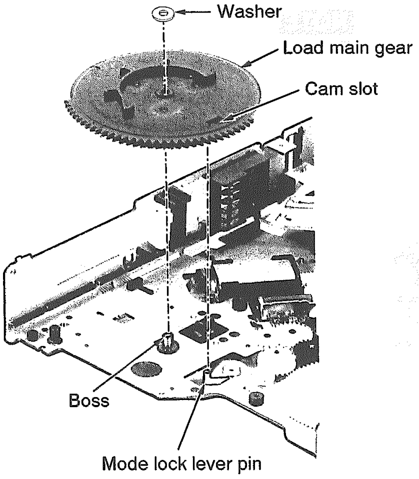
Step 12 Align the slots of step cam (R) ass'y with the hooks of mechanism chassis ass'y, and then install the step cam (R) ass'y.

NOTE

The rib of step cam (R) ass'y should be inserted in U–type slot of elevation lever.


Hole
Elevation cam
Elevation lever pin
Boss

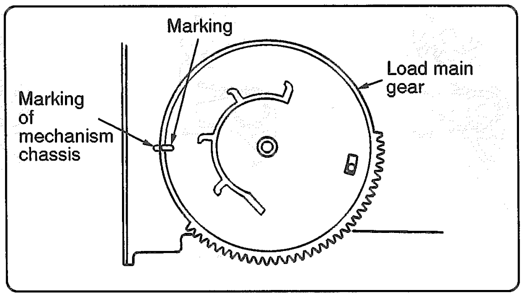
Step 13 Align the hole of elevation cam with the elevation lever pin, and then insert the elevation cam into the boss.

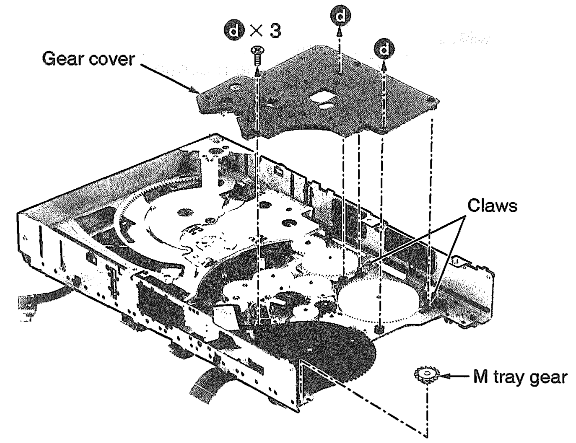

Washer
Load main gear
Cam slot
Boss
Mode lock lever pin

Step 14 Align the cam slot of load main gear with the pin of mode lock lever, and then insert the load main gear into the boss.

Step 15 Install the washer.

◉ Align the marking of load main gear with that of mechanism chassis. (Refer to figure below.)


Marking
Load main gear
Marking of mechanism chassis


ⓓ × 3
ⓓ
ⓓ
Gear cover
Claws
M tray gear

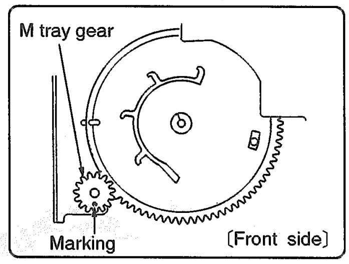
Step 16 Install the gear cover.

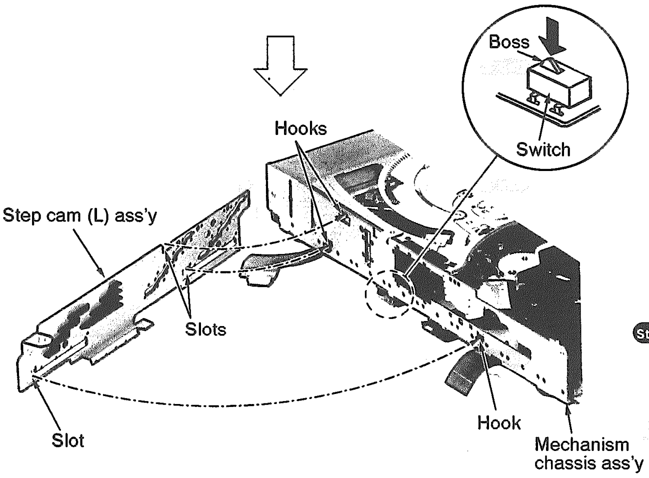
NOTE
The claws (2 points) must be latched.

Step 17 Tighten the screws (ⓓ).

Step 18 Install the M tray gear.

NOTE
Mate the marking toward the front side.
(Refer to figure below.)

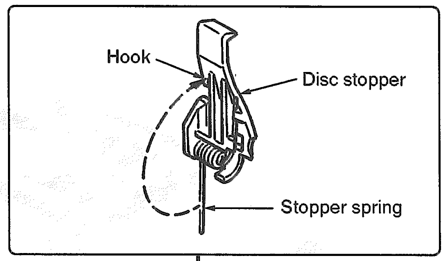

M tray gear
Marking
〔Front side〕

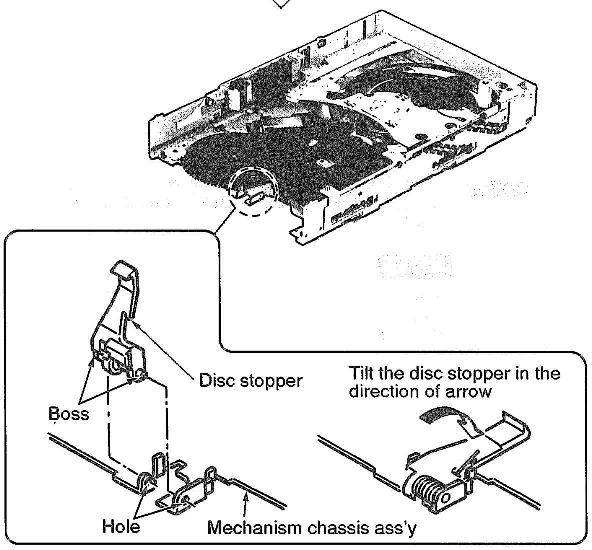

Boss
Switch
Hooks
Step cam (L) ass'y
Slots
Slot
Hook
Mechanism chassis ass'y

Step 19 Align the slots of step cam (L) ass'y with the hooks of mechanism chassis ass'y, and then install the step cam (L) ass'y.

NOTE
When installing the step cam (L) ass'y to the mechanism chassis ass'y, install it with pressing the switch boss in the direction of arrow.

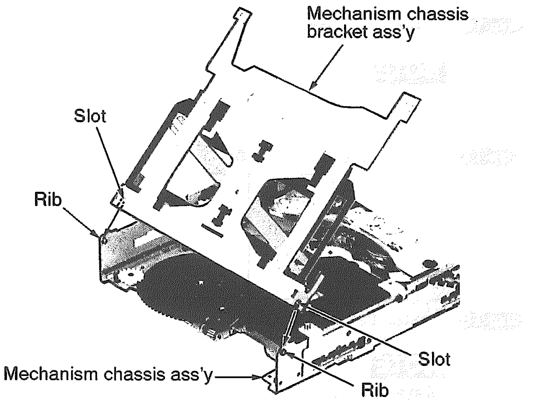
Step 20 Temporarily install the stopper spring on the hook of disc stopper.


Hook
Disc stopper
Stopper spring

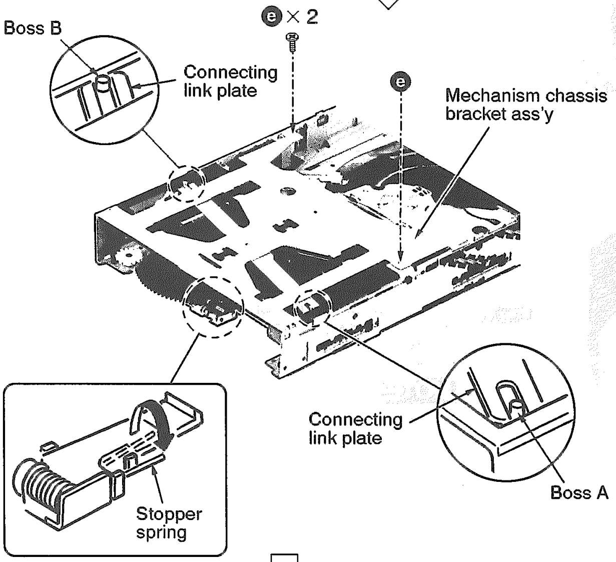

Disc stopper
Boss
Hole
Mechanism chassis ass'y

Tilt the disc stopper in the direction of arrow

Step 21 Align the boss of disc stopper with the hole of mechanism chassis ass'y.


Mechanism chassis bracket ass'y
Slot
Rib
Mechanism chassis ass'y
Slot
Rib

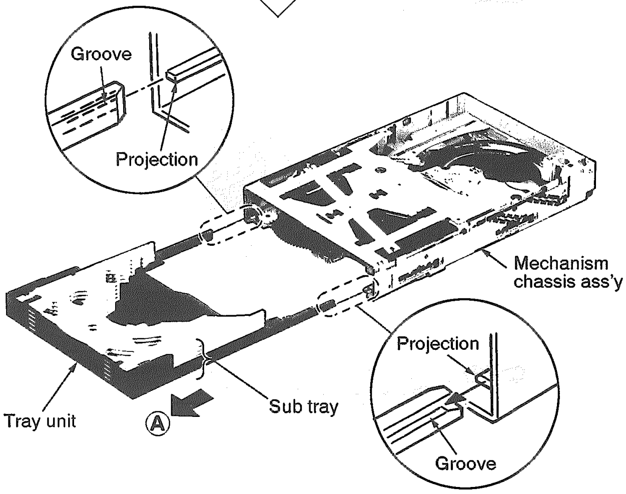
Step 22 Install the slot of mechanism chassis bracket ass'y into the rib of mechanism chassis ass'y, and then install the mechanism chassis bracket ass'y.


ⓔ × 2
Boss B
Connecting link plate
ⓔ
Mechanism chassis bracket ass'y
Connecting link plate
Boss A
Stopper spring

Step 23 Align the connecting link plate with the boss A of step cam (R) ass'y and boss B of step cam (L) ass'y.

Step 24 Tighten the screws (ⓔ).

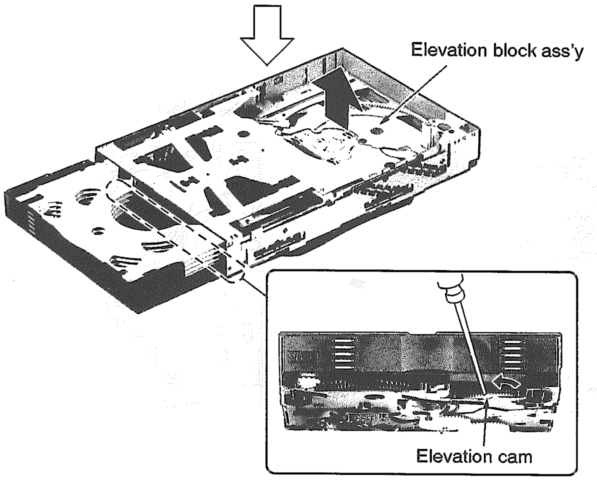
Step 25 Secure the stopper spring temporarily installed with disc stopper.


Groove
Projection
Mechanism chassis ass'y
Tray unit
Ⓐ
Sub tray
Projection
Groove

Step 26 Align the groove of tray unit with the projection of mechanism chassis ass'y, and then insert the tray unit.

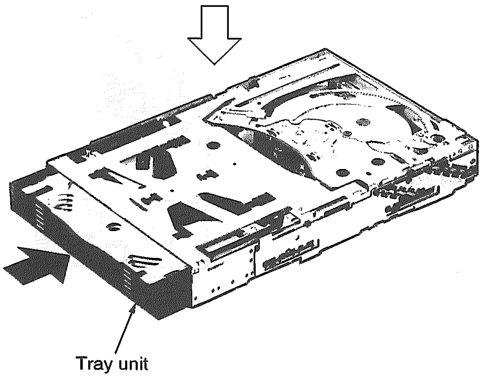
NOTE

After installing the tray unit, make sure that the 5 sub tray bases are located in the direction of arrow Ⓐ.


Elevation block ass'y
Elevation cam

〔Bottom side〕

Step 27 Rotate the elevation cam in the direction of arrow (counterclockwise), and then rise the elevation block ass'y.

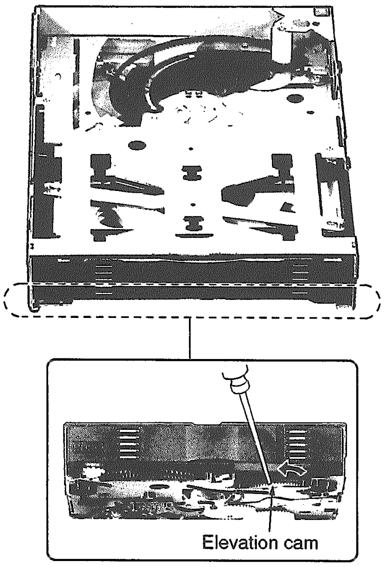


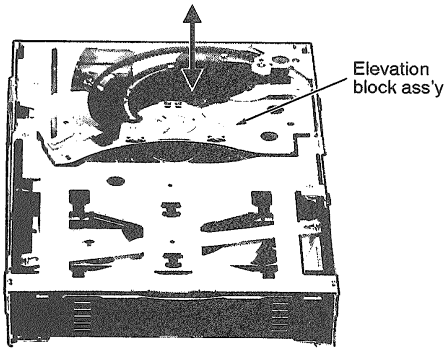
Step 28 Push the tray unit.

Loading components assembling complete

Manual operation check of loading components.

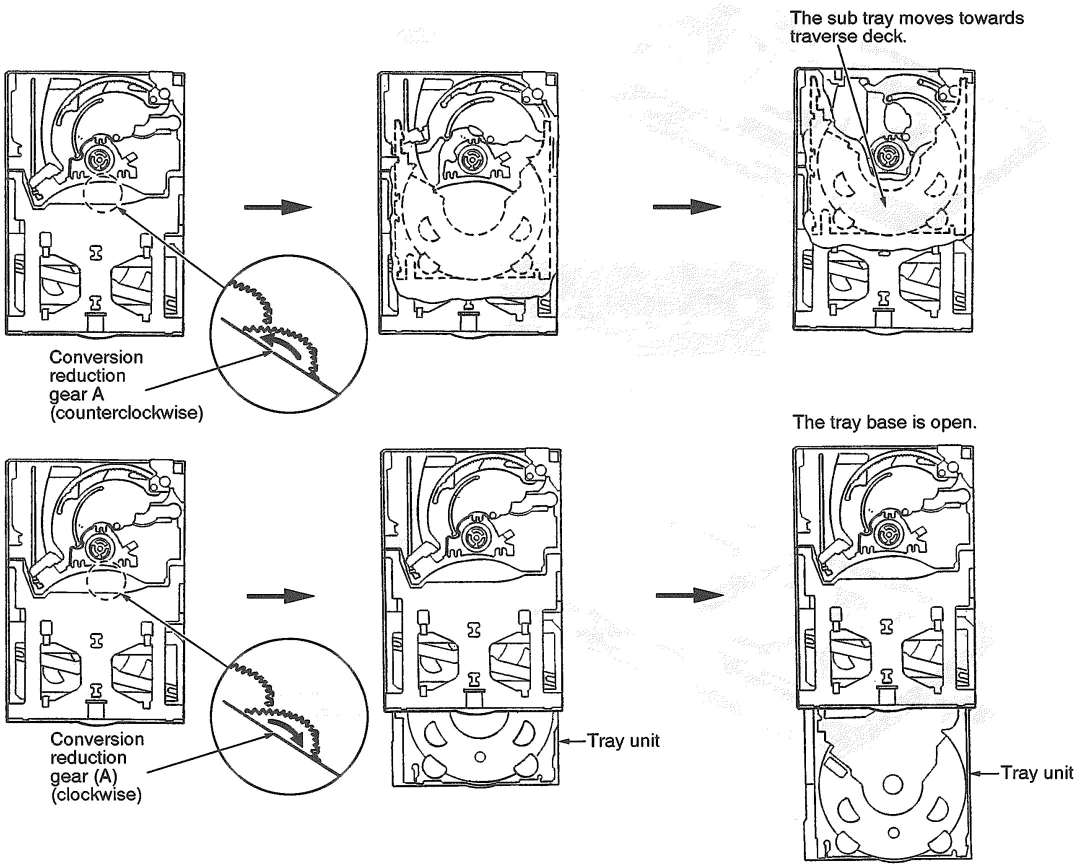
1. Elevation block operation.


Elevation cam


Elevation block ass'y

Elevation cam	Elevation block ass'y
Rotate counterclockwise	: Up ward
Rotate clockwise	: Down ward

2. Main tray and sub tray operation


The sub tray moves towards traverse deck.
Conversion reduction gear A (counterclockwise)
The tray base is open.
Conversion reduction gear (A) (clockwise)
Tray unit
Tray unit

Error Code Display and Servo Adjustment Function

This unit has an error code display function, so that if the unit operates incorrectly, the fault is displayed using an error code on the FL display of the tuner (ST-HD81). It also has a servo adjustment function for displaying the status of servo system functions (focus, tracking, CLV) on the tuner's FL display.
The system control IC and FL display are part of the tuner so make sure the system has been connected properly before using these functions. (This unit can be operated independently, although the error code display and servo adjustment functions cannot be used.)
Use these two functions for guidance during fault diagnosis and repair.

Note: Check beforehand for scratching or soiling of the test disc (SZZP1054C), and soiling or other problems with the optical pickup lens.

● Error code display and adjustment procedure

Turn the power ON.

↓

With no CD loaded in the tray, press the ▶(PLAY) button.

↓

Load the test disc (SZZP1054C).

↓

Hold down the STOP button for at least 2 seconds, and then press the F.SKIP button for at least 2 seconds while continuing to hold down the STOP button.

↓

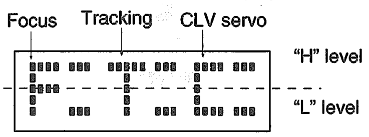
A servo section error code is displayed. (See **Table 2.**) Use this error code display as a guideline for finding the malfunction point in the servo circuitry. If the error code **"E-00"** is displayed, the unit is "OK (No problem)."

↓

Press the ▶(PLAY) button.

↓

Servo adjustment results are displayed



↓

Ⓐ

Ⓐ

↓

Press the STOP button.

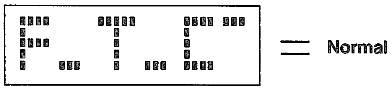
↓

A mechanism OK/NG error code is displayed. (See **Table 1.**) This error code can be used to diagnose whether or not the mechanism is OK. If there are multiple errors, these can be displayed successively by pressing the STOP button.

↓

Remove the disc and turn the power OFF. (The error code display mode is canceled.)

(Example)



	"L" level	"H" level
Focus	Focus system normal	Focus system defective
Tracking	Tracking system normal	Tracking system defective
CLV servo	CLV servo system defective	CLV servo system normal

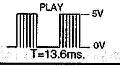
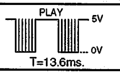
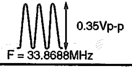
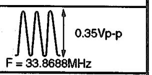
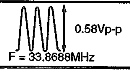
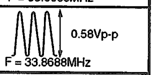
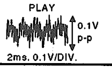
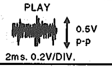
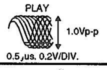
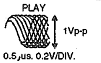
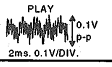
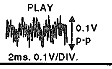
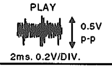
● Table 1

FL display	Symptom	Cause
H - 15	When CD tray opens, it closes by itself.	Disc tray "Open" detection sensor (Z3) fault.
H - 16	When CD tray closes, it opens by itself	Disc tray "Closed" detection sensor (Z2) fault.
F - 15	Does not play, even when CD play button is pressed.	Pickup rest position detection switch fault.
F - 17	The tray opens.	Traverse deck DOWN detection switch (S1) fault.
F - 26	Does not move even when ▶(PLAY) is pressed.	System control or servo processor IC (IC401, IC501) fault.
F-27	The selected disc tray does not open.	Positioning detection sensor (Z1) fault.
F-30	The unit try to play without a disc.	Disc IN/OUT detection sensor (Q691, D691) fault.

●Table 2

※ The unit is satisfactory if the error code is **E - 00** of **E - 02**

※ Before testing, check that the test disc is free of scratches and optical pickup is clean.

FL error code display	Symptom	Probable cause	Signal to check		Normal voltage and waveform values	
			Signal name	Location	PLAY	STOP
E - 01	Focus and tracking offset adjustments not completed in the specified time period.	1. Clocks X1 and X2, power supply VDD and reset/RST, all on IC401. 2. MDATA, MCLK, MLD and SENSE signal to/from mechanism controller.	MDATA	IC401 ⑧ pin		0V
			MCLK	IC401 ⑦ pin		4.9V
			MLD	IC401 ⑨ pin		4.9V
			SENSE	IC401 ⑩ pin	—	—
			/RST	IC401 ⑱ pin	4.8V	4.8V
			X1	IC401 (73) pin		
			X2	IC401 (74) pin		
E - 03 **E - 05** **E - 07** **E - 09** **E - 0B** **E - 0D** **E - 0F**	Disc play unstable.	1. Scratches or contaminants on disc surface. 2. Focus and tracking servo circuits (check waveforms, voltages, and part values.) 3. Spindle driver circuit. 4. Optical pickup.	FE	IC401 ㊶ pin		2.4V
			TE	IC401 ㊷ pin		2.4V
			FOD	IC401 ㉞ pin	2.4V	2.4V
			TRD	IC401 ㉜ pin	2.4V	2.4V
			KICK	IC401 ㉛ pin	2.4V	2.4V
			/FLOCK	IC401 ⑪ pin	—	—
			/RF DET	IC401 ㊼ pin	0V	4.8V
			RF	IC401 (54) pin		2.4V
			STAT	IC401 ⑰ pin	4.8V	0V
E - 04 **E - 06** **E - 0C** **E - 0E**	Best "Eye" (PD Balance) adjustment not completed in the specified time period.	1. Scratches or contaminants on disc surface. 2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.) 3. Optical pickup.	FBAL	IC401 ㊲ pin	2.4V	2.4V
			RF	IC401 (54) pin		2.4V
			FE	IC401 ㊶ pin		2.4V
			/TLOCK	IC401 ⑫ pin	—	—
			OFT	IC401 ㊺ pin	0V	0V
E - 08 **E - 0A**	Focus or Tracking gain adjustment not completed in the specified time period.	1. Scratches or contaminants on disc surface. 2. Focus and Tracking servo circuit (check waveforms, voltages, and part values.) 3. Optical pickup.	FE	IC401 ㊶ pin		2.4V
			TE	IC401 ㊷ pin		2.4V
			/TLOCK	IC401 ⑫ pin	—	—
			OFT	IC401 ㊺ pin	0V	0V

Measurements and Adjustments

Cautions:
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens.
- Avoid exposure to the laser beam, especially when performing adjustments.

This unit SL-HD81 is designed to operate on power supplied from the Amplifier SE-HD81 through the Tuner ST-HD81.
When connecting the unit to other system components, do not connect to the Amplifier SE-HD81 directly. Be sure to connect this unit through the Tuner ST-HD81.
When operating the unit SL-HD81 alone for testing and servicing, without having power supplied from the Amplifier SE-HD81, use the following method.

Power Supply to This Unit alone

Apply 11V AC power to the section between AC IN of the coil (L101) and the jumper (J253) GND as well as the section between AC IN of the coil (L102) and the jumper (J101) GND. **(Shown in Fig. 1)**

To Check Signals

Connect the oscilloscope or the speaker with built-in amplifier to the section between LINE OUT (Lch) of the resistor R127 and the GND point of the jumper (J101) as well as the section between LINE OUT (R ch) of the resistor R126 and the GND point of the jumper (J253) and check if the signals are outputting from this unit. **(Shown in Fig. 1)**

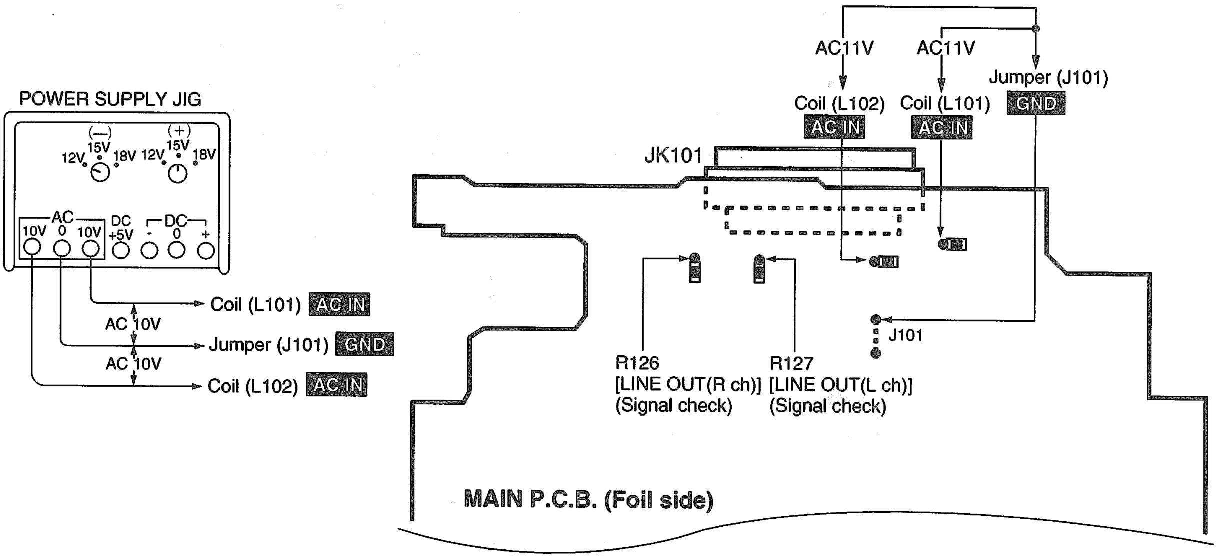
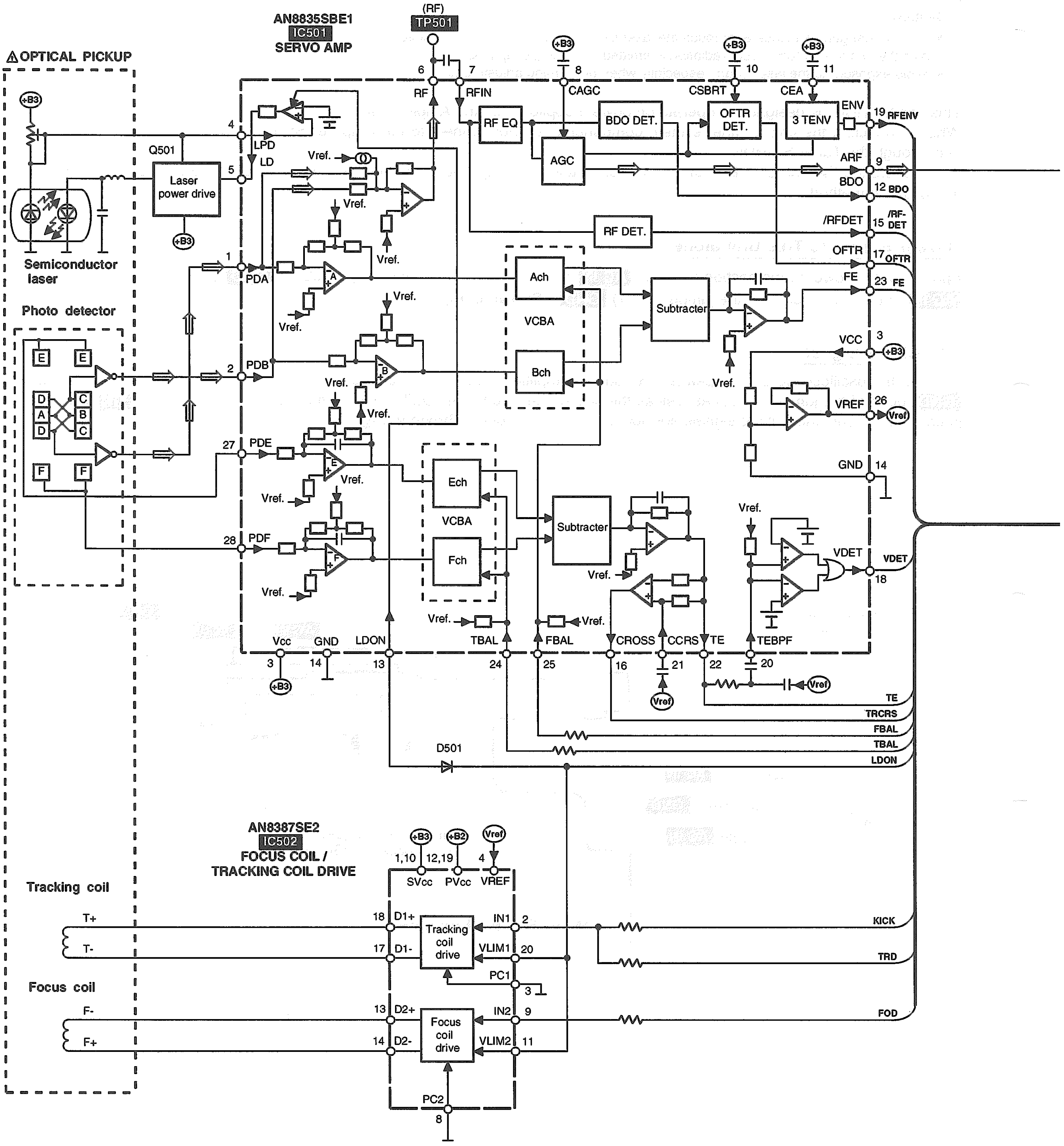
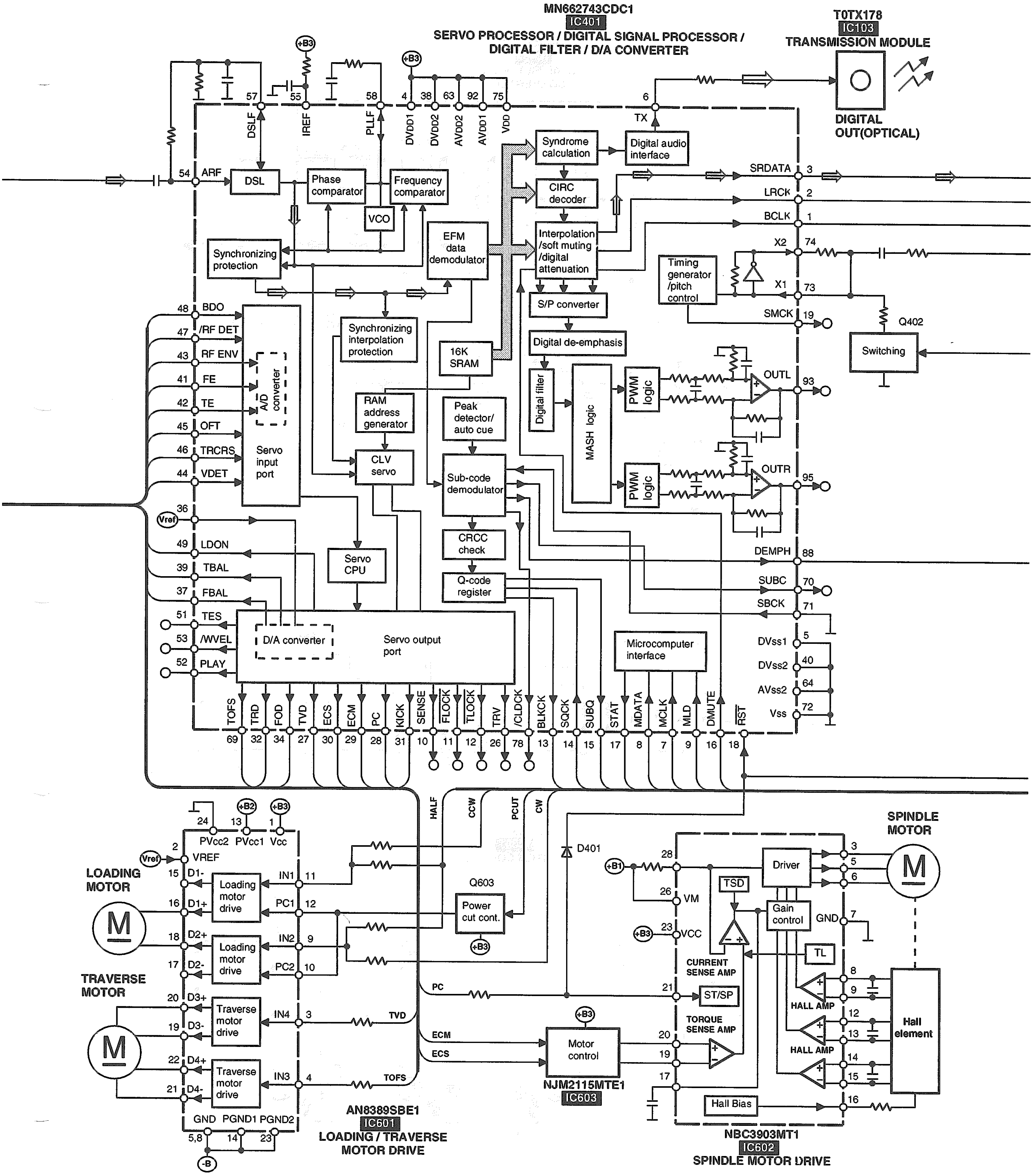
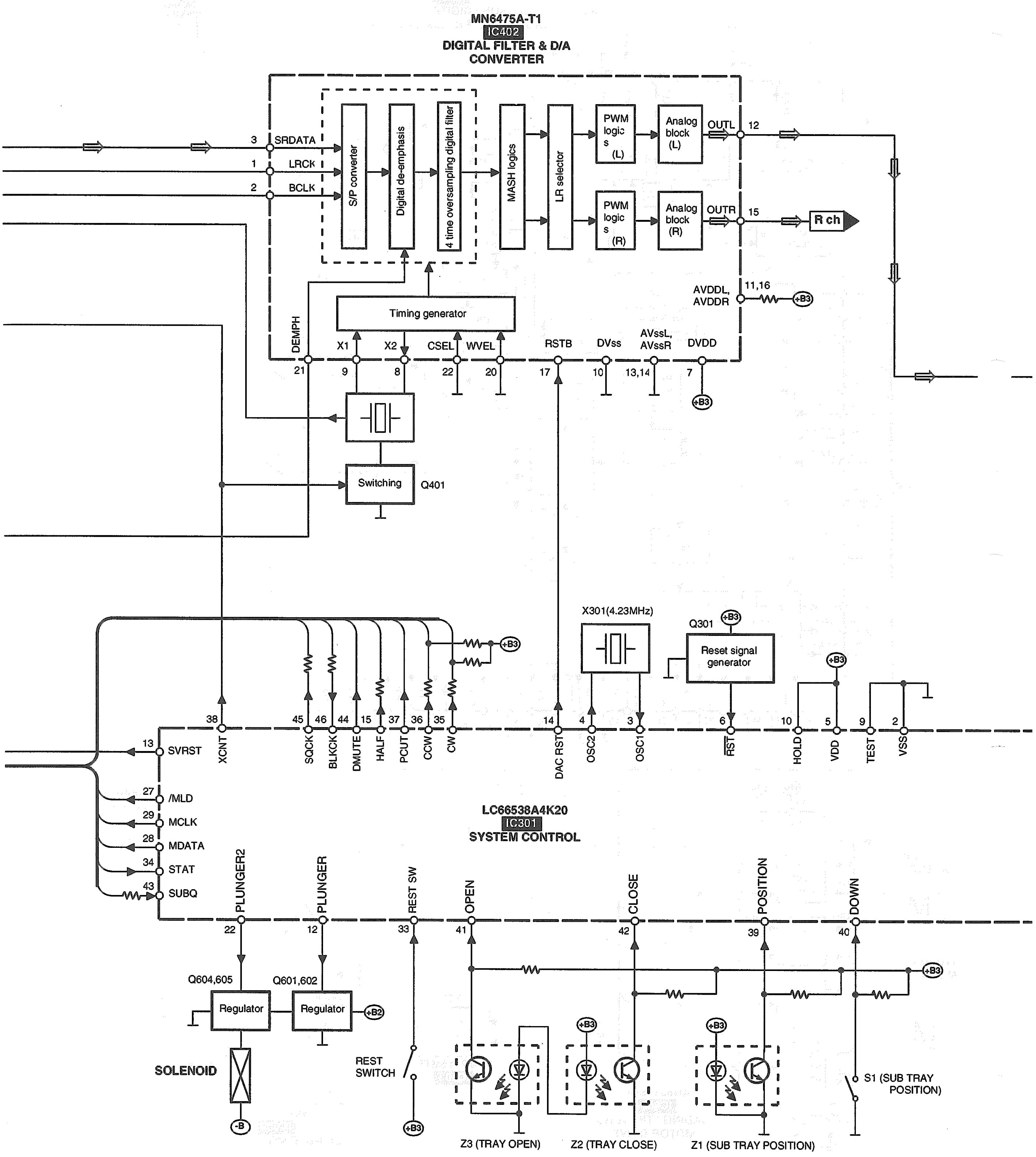

POWER SUPPLY JIG
(−)
(+)
12V
15V
18V
12V
15V
18V
AC
10V
0
10V
DC +5V
DC
-
0
+
Coil (L101) AC IN
AC 10V
Jumper (J101) GND
AC 10V
Coil (L102) AC IN
AC11V
AC11V
Jumper (J101)
Coil (L102)
Coil (L101)
GND
AC IN
AC IN
JK101
J101
R126
[LINE OUT(R ch)]
(Signal check)
R127
[LINE OUT(L ch)]
(Signal check)
MAIN P.C.B. (Foil side)

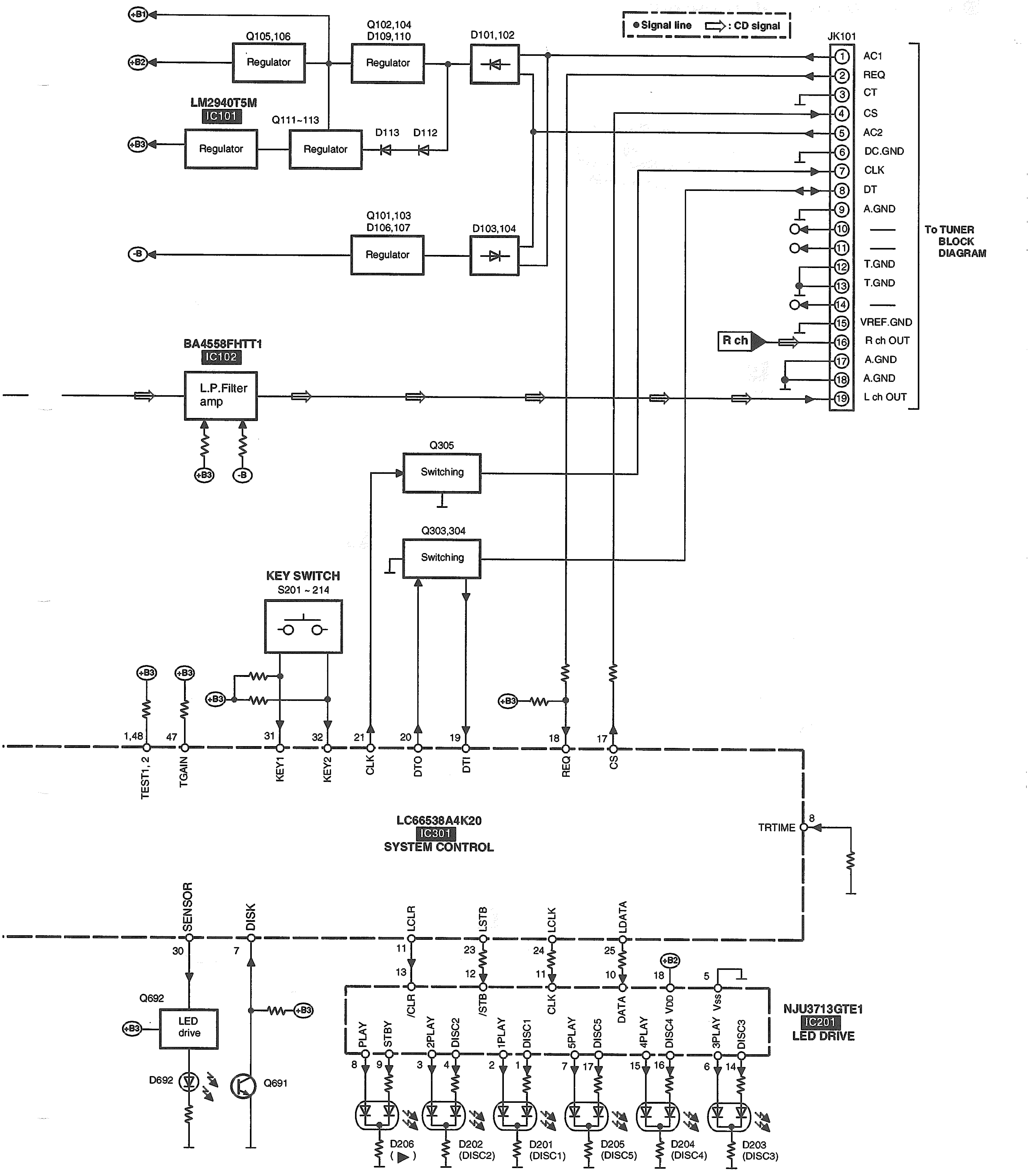
Fig. 1

Block Diagram

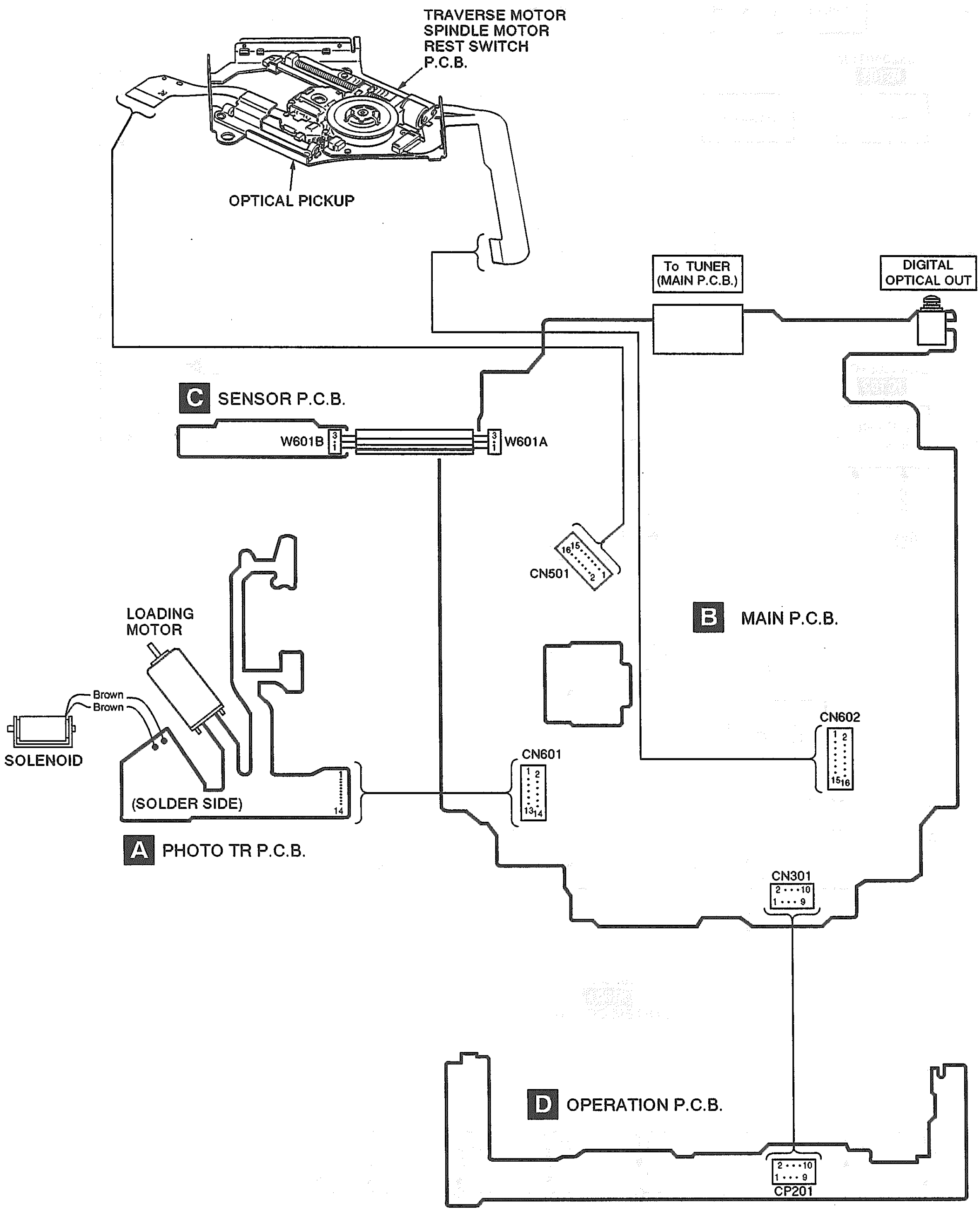

AN8835SBE1
IC501
SERVO AMP
(RF)
TP501
⚠OPTICAL PICKUP
+B3
Q501
Laser power drive
Semiconductor laser
Photo detector
E
E
D
A
D
C
B
C
F
F
LPD
LD
PDA
PDB
PDE
PDF
Vref.
RF
RFIN
CAGC
CSBRT
CEA
RF EQ
AGC
BDO DET.
OFTR DET.
3 TENV
ENV
RFENV
ARF
BDO
/RFDET
/RF-DET
RF DET.
OFTR
FE
VCC
VREF
GND
Vref
Ach
Bch
VCBA
Subtracter
Ech
Fch
VCBA
Subtracter
VDET
Vcc
GND
LDON
TBAL
FBAL
CROSS
CCRS
TE
TEBPF
TE
TRCRS
FBAL
TBAL
LDON
D501
AN8387SE2
IC502
FOCUS COIL /
TRACKING COIL DRIVE
+B2
SVcc
PVcc
VREF
1,10
12,19
4
Tracking coil
T+
T-
Focus coil
F-
F+
D1+
D1-
D2+
D2-
Tracking coil drive
Focus coil drive
IN1
VLIM1
PC1
IN2
VLIM2
PC2
KICK
TRD
FOD
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28


MN662743CDC1
IC401
SERVO PROCESSOR / DIGITAL SIGNAL PROCESSOR / DIGITAL FILTER / D/A CONVERTER
T0TX178
IC103
TRANSMISSION MODULE
DIGITAL OUT(OPTICAL)
+B3
57
55
58
4
38
63
92
75
6
TX
DSLF
IREF
PLLF
DVDD1
DVDD2
AVDD2
AVDD1
VDD
Syndrome calculation
Digital audio interface
54
ARF
DSL
Phase comparator
Frequency comparator
VCO
CIRC decoder
SRDATA
3
LRCK
2
BCLK
1
EFM data demodulator
Interpolation /soft muting /digital attenuation
X2
74
Timing generator /pitch control
X1
73
Synchronizing protection
S/P converter
SMCK
19
Q402
Switching
48
BDO
47
/RF DET
43
RF ENV
41
FE
42
TE
45
OFT
46
TRCRS
44
VDET
A/D converter
Servo input port
Synchronizing interpolation protection
16K SRAM
Digital de-emphasis
RAM address generator
Peak detector/ auto cue
Digital filter
MASH logic
PWM logic
OUTL
93
CLV servo
Sub-code demodulator
PWM logic
OUTR
95
36
Vref
49
LDON
39
TBAL
37
FBAL
Servo CPU
CRCC check
Q-code register
DEMPH
88
SUBC
70
SBCK
71
51
TES
53
/WVEL
52
PLAY
D/A converter
Servo output port
Microcomputer interface
DVss1
5
DVss2
40
AVss2
64
Vss
72
TOFS
TRD
FOD
TVD
ECS
ECM
PC
KICK
SENSE
FLOCK
TLOCK
TRV
/CLDCK
BLKCK
SQCK
SUBQ
STAT
MDATA
MCLK
MLD
DMUTE
RST
69
32
34
27
30
29
28
31
10
11
12
26
78
13
14
15
17
8
7
9
16
18
HALF
CCW
PCUT
CW
+B2
+B3
24
13
1
PVcc2
PVcc1
Vcc
2
VREF
LOADING MOTOR
15
D1-
16
D1+
Loading motor drive
IN1
11
PC1
12
18
D2+
17
D2-
Loading motor drive
IN2
9
PC2
10
TRAVERSE MOTOR
20
D3+
19
D3-
Traverse motor drive
IN4
3
TVD
22
D4+
21
D4-
Traverse motor drive
IN3
4
TOFS
GND
PGND1
PGND2
5,8
14
23
-B
AN8389SBE1
IC601
LOADING / TRAVERSE MOTOR DRIVE
Q603
Power cut cont.
+B3
PC
ECM
ECS
D401
+B1
28
26
VM
23
VCC
21
20
19
17
Motor control
NJM2115MTE1
IC603
Driver
TSD
Gain control
GND
TL
CURRENT SENSE AMP
ST/SP
TORQUE SENSE AMP
HALL AMP
HALL AMP
Hall Bias
Hall element
SPINDLE MOTOR
3
5
6
7
8
9
12
13
14
15
16
NBC3903MT1
IC602
SPINDLE MOTOR DRIVE
M


MN6475A-T1
IC402
DIGITAL FILTER & D/A CONVERTER
3 SRDATA
1 LRCK
2 BCLK
S/P converter
Digital de-emphasis
4 time oversampling digital filter
MASH logics
LR selector
PWM logics (L)
PWM logics (R)
Analog block (L)
Analog block (R)
OUTL 12
OUTR 15
R ch
AVDDL, AVDDR 11,16
+B3
Timing generator
DEMPH 21
X1 9
X2 8
CSEL 22
WVEL 20
RSTB 17
DVss 10
AVssL, AVssR 13,14
DVDD 7
Switching
Q401
X301(4.23MHz)
Q301
Reset signal generator
13 SVRST
27 /MLD
29 MCLK
28 MDATA
34 STAT
43 SUBQ
38 XCNT
45 SQCK
46 BLKCK
44 DMUTE
15 HALF
37 PCUT
36 CCW
35 CW
14 DAC RST
4 OSC2
3 OSC1
6 RST
10 HOLD
5 VDD
9 TEST
2 VSS
LC66538A4K20
IC301
SYSTEM CONTROL
22 PLUNGER2
12 PLUNGER
33 REST SW
41 OPEN
42 CLOSE
39 POSITION
40 DOWN
Q604,605
Q601,602
Regulator
Regulator
+B2
SOLENOID
-B
REST SWITCH
S1 (SUB TRAY POSITION)
Z3 (TRAY OPEN)
Z2 (TRAY CLOSE)
Z1 (SUB TRAY POSITION)


●Signal line
⇨ : CD signal
+B1
+B2
+B3
-B
Q105,106
Regulator
Q102,104
D109,110
Regulator
D101,102
LM2940T5M
IC101
Regulator
Q111~113
Regulator
D113
D112
Q101,103
D106,107
Regulator
D103,104
JK101
1 AC1
2 REQ
3 CT
4 CS
5 AC2
6 DC.GND
7 CLK
8 DT
9 A.GND
10 —
11 —
12 T.GND
13 T.GND
14 —
15 VREF.GND
16 R ch OUT
17 A.GND
18 A.GND
19 L ch OUT
To TUNER BLOCK DIAGRAM
R ch
BA4558FHTT1
IC102
L.P.Filter amp
Q305
Switching
Q303,304
Switching
KEY SWITCH
S201 ~ 214
1,48
47
31
32
21
20
19
18
17
TEST1, 2
TGAIN
KEY1
KEY2
CLK
DTO
DTI
REQ
CS
LC66538A4K20
IC301
SYSTEM CONTROL
TRTIME
8
SENSOR
DISK
LCLR
LSTB
LCLK
LDATA
30
7
11
23
24
25
13
12
11
10
18
5
/CLR
/STB
CLK
DATA
VDD
Vss
NJU3713GTE1
IC201
LED DRIVE
PLAY
STBY
2PLAY
DISC2
1PLAY
DISC1
5PLAY
DISC5
4PLAY
DISC4
3PLAY
DISC3
8
9
3
4
2
1
7
17
15
16
6
14
Q692
LED drive
D692
Q691
D206
(▶)
D202
(DISC2)
D201
(DISC1)
D205
(DISC5)
D204
(DISC4)
D203
(DISC3)

Wiring Connection Diagram


TRAVERSE MOTOR
SPINDLE MOTOR
REST SWITCH
P.C.B.
OPTICAL PICKUP
To TUNER (MAIN P.C.B.)
DIGITAL OPTICAL OUT
C SENSOR P.C.B.
W601B
W601A
CN501
B MAIN P.C.B.
LOADING MOTOR
Brown
Brown
SOLENOID
(SOLDER SIDE)
A PHOTO TR P.C.B.
CN601
CN602
CN301
D OPERATION P.C.B.
CP201

Schematic Diagram (Parts list on pages 46~48.)

- This schematic diagram may be modified at any time with the development of new technology.

Page

A PHOTO TR CIRCUIT.. 34

B MAIN CIRCUIT.. 34~37

Page

C SENSOR CIRCUIT... 34

D OPERATION CIRCUIT 36

Notes:

- **S1** : Mechanism position detect switch.
- **S201**: Disc select (DISC1) switch.
- **S202**: Disc select (DISC2) switch.
- **S203**: Disc select (DISC3) switch.
- **S204**: Disc select (DISC4) switch.
- **S205**: Disc select (DISC5) switch.
- **S206**: Disc tray open/close (▲ OPEN/CLOSE) switch.
- **S207**: Play (▶) switch.
- **S208**: Pause (❚❚) switch.
- **S209**: Stop (■) switch.
- **S210**: F. skip/ search (▶▶ / ▶▶❚) switch
- **S211**: R. skip/ search (❚◀◀ / ◀◀) switch.
- **S212**: AI edit switch (AI EDIT)
- **S213**: Repeat switch (REPEAT)
- **S214**: Random play switch (RANDOM)
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark: CD STOP
(   ): CD play [1kHz, L+R, 0dB]

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purpose of fire-retardant (resistors), high-quality sound (capacitors), low-nose (resistors), etc. are used. When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts.

Parts No.	Production Part No.	Supply Part No.
IC603	NJM2115MTE1	NJM2115MT1

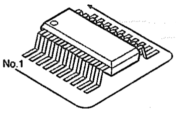
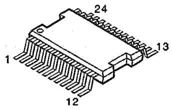
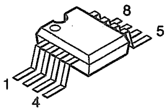
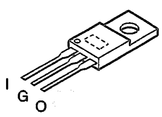
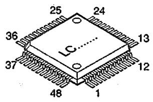
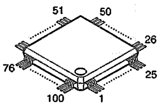
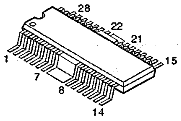
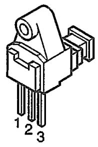
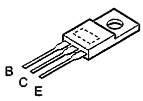
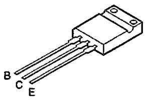
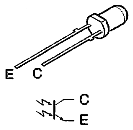
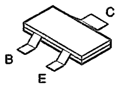
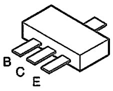
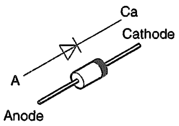
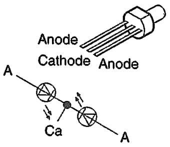
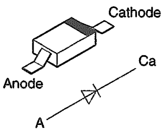
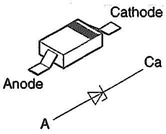
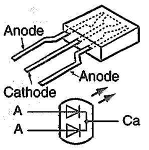
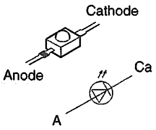
- **Caution** !
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

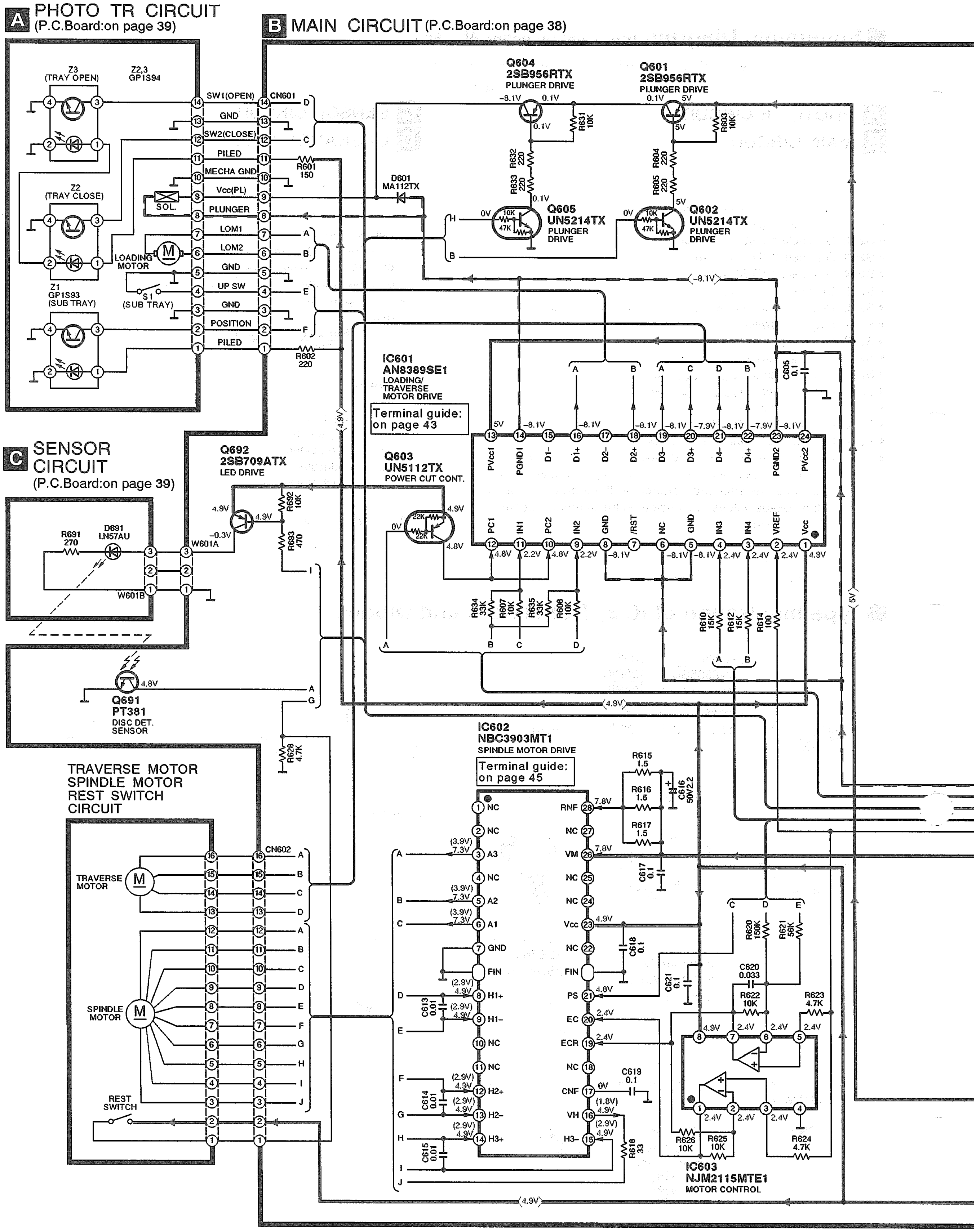
- Voltage and signal line

➡ : Positive voltage line ➡ : Negative voltage line

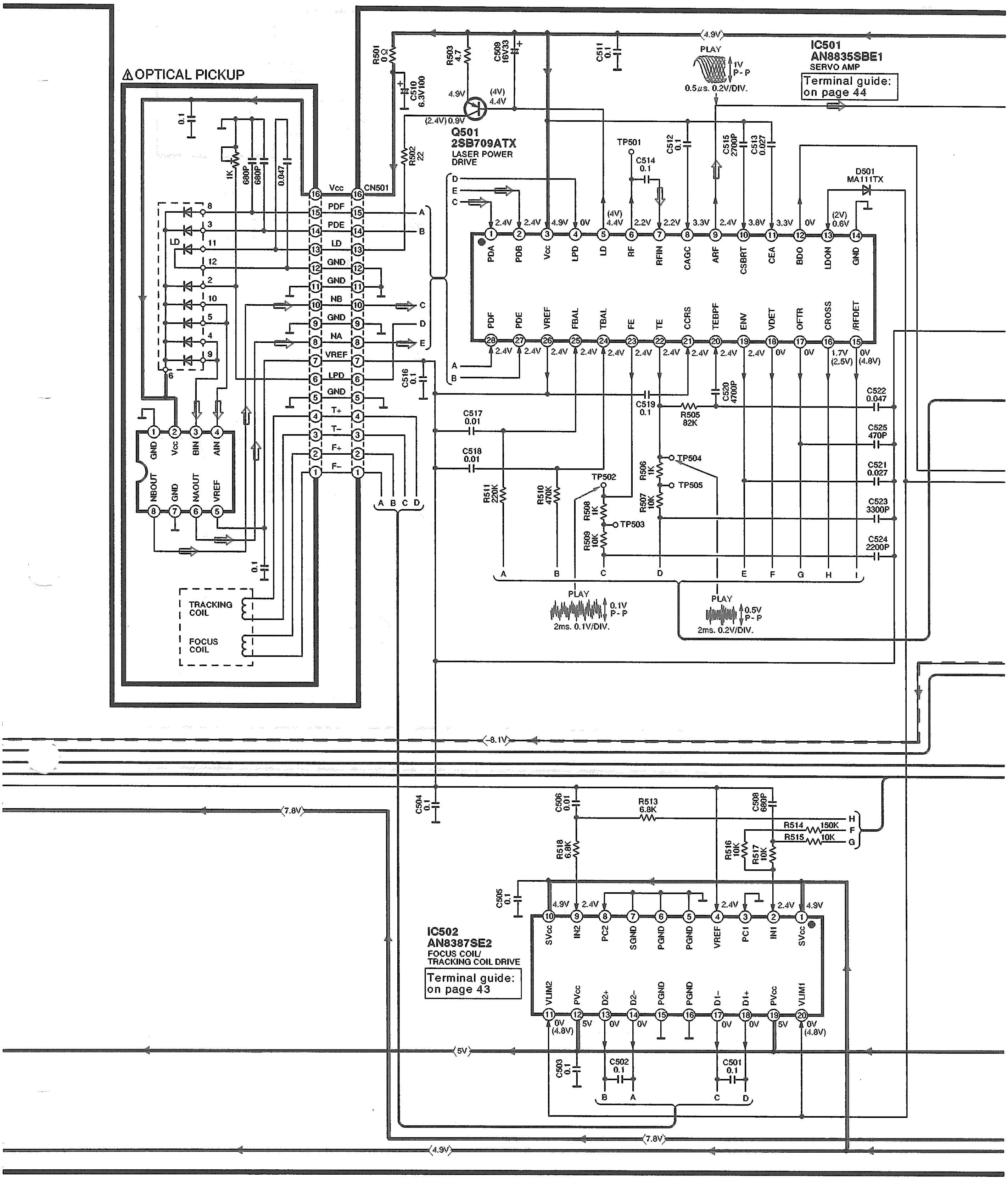
⇨: CD signal

Type Illustration of IC's, Transistors and Diodes

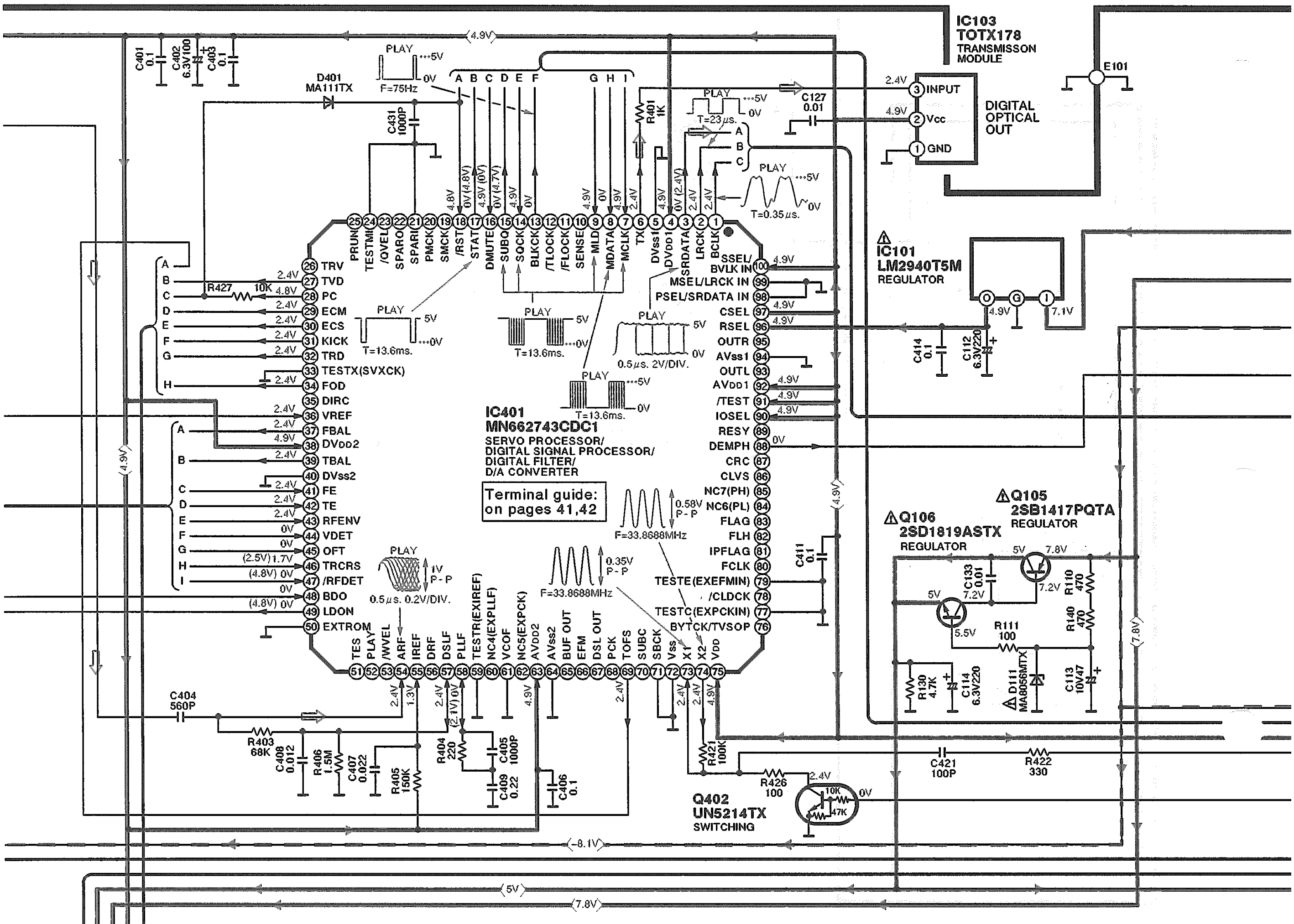
	AN8387SE2 20PIN AN8835SBE1 28PIN MN6475A-T1 24PIN NJM2115MTE1 8PIN NJU3713GTE1 18PIN	AN8389SE1 	BA4558FHTT1 	LM2940T5M 	LC66538A4K20 
MN662743CDC1 	NBC3903MT1 	TOTX178 	2SB1548PQAU 2SD2374PQAU 	2SB1417PQTA 2SD2137PQTA 	PT381 
	2SB709ATX 2SD1819ASTX UN5112TX UN5214TX	2SB956RTX 2SB766QRSTX 2SD874QRSTX 	RL1N4003N02 	SPR-305MDTF 	MA111TX MA112TX 
MA8056MTX MA8075MTX 	AABG4607K740 	LN57AU 			


A PHOTO TR CIRCUIT (P.C.Board:on page 39)
B MAIN CIRCUIT (P.C.Board:on page 38)
C SENSOR CIRCUIT (P.C.Board:on page 39)
TRAVERSE MOTOR SPINDLE MOTOR REST SWITCH CIRCUIT
Z3 (TRAY OPEN)
Z2,3 GP1S94
Z2 (TRAY CLOSE)
Z1 GP1S93 (SUB TRAY)
SOL.
LOADING MOTOR
S1 (SUB TRAY)
SW1(OPEN)
GND
SW2(CLOSE)
PILED
MECHA GND
Vcc(PL)
PLUNGER
LOM1
LOM2
UP SW
POSITION
CN601
R601 150
R602 220
D601 MA112TX
Q604 2SB956RTX PLUNGER DRIVE
Q601 2SB956RTX PLUNGER DRIVE
R631 10K
R603 10K
R632 220
R633 220
R604 220
R605 220
Q605 UN5214TX PLUNGER DRIVE
Q602 UN5214TX PLUNGER DRIVE
IC601 AN8389SE1 LOADING/ TRAVERSE MOTOR DRIVE
Terminal guide: on page 43
C605 0.1
PVcc1
PGND1
D1−
D1+
D2−
D2+
D3−
D3+
D4−
D4+
PGND2
PVcc2
PC1
IN1
PC2
IN2
GND
/RST
NC
IN3
IN4
VREF
Vcc
R634 33K
R607 10K
R635 33K
R608 10K
R610 15K
R612 15K
R614 100
Q692 2SB709ATX LED DRIVE
R692 10K
R693 470
Q603 UN5112TX POWER CUT CONT.
R691 270
D691 LN57AU
W601A
W601B
Q691 PT381 DISC DET. SENSOR
R628 4.7K
IC602 NBC3903MT1 SPINDLE MOTOR DRIVE
Terminal guide: on page 45
R615 1.5
R616 1.5
R617 1.5
C616 50V2.2
C617 0.1
C618 0.1
C621 0.1
C619 0.1
R618 33
C613 0.01
C614 0.01
C615 0.01
NC
A3
A2
A1
GND
FIN
H1+
H1−
H2+
H2−
H3+
RNF
VM
Vcc
PS
EC
ECR
CNF
VH
H3−
R620 150K
R621 56K
C620 0.033
R622 10K
R623 4.7K
R626 10K
R625 10K
R624 4.7K
IC603 NJM2115MTE1 MOTOR CONTROL
CN602
TRAVERSE MOTOR
SPINDLE MOTOR
REST SWITCH
(4.9V)
(−8.1V)
(5V)

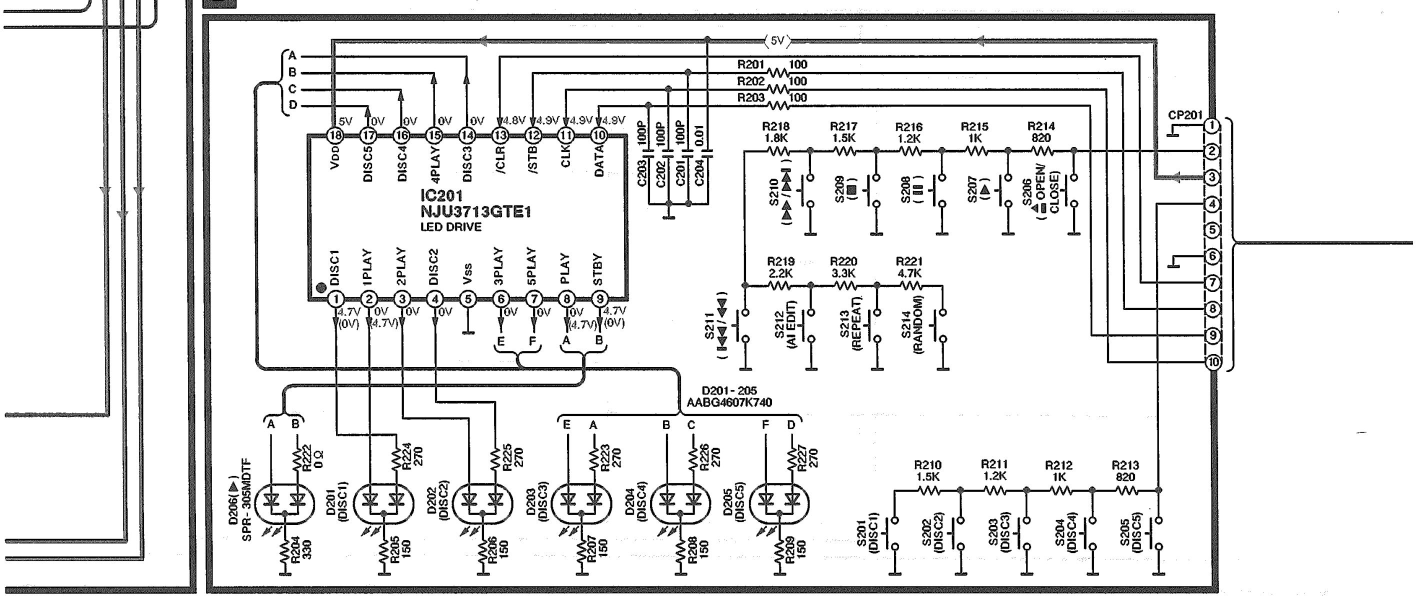
Note ● ⟹: CD signal

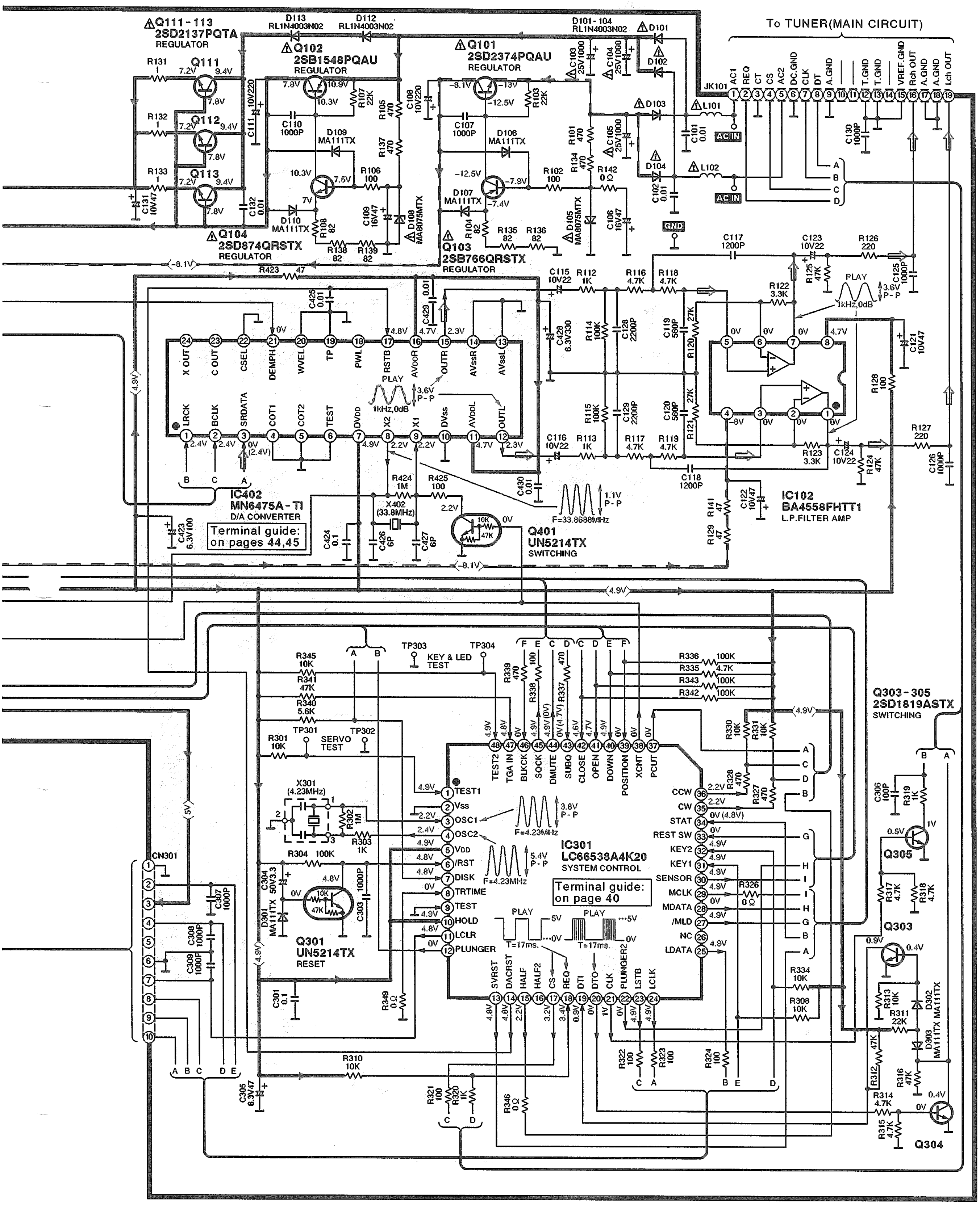

⚠OPTICAL PICKUP
CN501
Vcc
PDF
PDE
LD
GND
NB
NA
VREF
LPD
T+
T-
F+
F-
TRACKING COIL
FOCUS COIL
GND
Vcc
BIN
AIN
NBOUT
NAOUT
VREF
1K
680P
680P
0.047
0.1
R501 0Ω
R502 22
R503 4.7
C509 16V33
C510 6.3V100
C511 0.1
C516 0.1
Q501
2SB709ATX
LASER POWER DRIVE
4.9V
(4V) 4.4V
(2.4V) 0.9V
4.9V
PLAY
1V P-P
0.5µs. 0.2V/DIV.
IC501
AN8835SBE1
SERVO AMP
Terminal guide: on page 44
TP501
C512 0.1
C514 0.1
C515 2700P
C513 0.027
D501 MA111TX
PDA
PDB
Vcc
LPD
LD
RF
RFIN
CAGC
ARF
CSBRT
CEA
BDO
LDON
GND
PDF
PDE
VREF
FBAL
TBAL
FE
TE
CCRS
TEBPF
ENV
VDET
OFTR
CROSS
/RFDET
2.4V
2.4V
4.9V
0V
(4V) 4.4V
2.2V
2.2V
3.3V
2.4V
3.8V
3.3V
0V
(2V) 0.6V
1.7V (2.5V)
0V (4.8V)
C517 0.01
C518 0.01
C519 0.1
C520 4700P
R505 82K
R506 1K
R507 10K
R508 1K
R509 10K
R510 470K
R511 220K
TP502
TP503
TP504
TP505
C522 0.047
C525 470P
C521 0.027
C523 3300P
C524 2200P
A B C D E F G H I
PLAY
0.1V P-P
2ms. 0.1V/DIV.
PLAY
0.5V P-P
2ms. 0.2V/DIV.
8.1V
7.8V
C504 0.1
C506 0.01
R513 6.8K
C508 680P
R514 150K
R515 10K
R516 10K
R517 10K
R518 6.8K
C505 0.1
IC502
AN8387SE2
FOCUS COIL/ TRACKING COIL DRIVE
Terminal guide: on page 43
SVcc
IN2
PC2
SGND
PGND
PGND
VREF
PC1
IN1
SVcc
VLIM2
PVcc
D2+
D2-
PGND
PGND
D1-
D1+
PVcc
VLIM1
4.9V
2.4V
0V (4.8V)
5V
0V
C503 0.1
C502 0.1
C501 0.1
5V
7.8V
4.9V

B MAIN CIRCUIT (P.C.Board:on page 38)


IC103
TOTX178
TRANSMISSON MODULE
DIGITAL OPTICAL OUT
INPUT
Vcc
GND
E101
C127 0.01
IC101
LM2940T5M
REGULATOR
IC401
MN662743CDC1
SERVO PROCESSOR/ DIGITAL SIGNAL PROCESSOR/ DIGITAL FILTER/ D/A CONVERTER
Terminal guide: on pages 41,42
Q105
2SB1417PQTA
REGULATOR
Q106
2SD1819ASTX
REGULATOR
Q402
UN5214TX
SWITCHING
D401
MA111TX
D111
MA8056MTX
R401 1K
R427 10K
R403 68K
R404 220
R405 150K
R406 1.5M
R421 100K
R422 330
R426 100
R110 470
R140 470
R111 100
R130 4.7K
C401 0.1
C402 6.3V100
C403 0.1
C404 560P
C405 1000P
C406 0.1
C407 0.022
C408 0.012
C409 0.22
C411 0.1
C421 100P
C431 1000P
C112 6.3V220
C113 10V47
C114 6.3V220
C133 0.01
C414 0.1
PLAY
F=75Hz
T=23μs.
T=0.35μs.
T=13.6ms.
0.5μs. 2V/DIV.
0.5μs. 0.2V/DIV.
F=33.8688MHz
0.58V P-P
0.35V P-P
1V P-P
4.9V
-8.1V
5V
7.8V

D OPERATION CIRCUIT (P.C.Board:on page 39)


IC201
NJU3713GTE1
LED DRIVE
VDD
DISC5
DISC4
4PLAY
DISC3
/CLR
/STB
CLK
DATA
DISC1
1PLAY
2PLAY
DISC2
Vss
3PLAY
5PLAY
PLAY
STBY
CP201
R201 100
R202 100
R203 100
R214 820
R215 1K
R216 1.2K
R217 1.5K
R218 1.8K
R219 2.2K
R220 3.3K
R221 4.7K
R210 1.5K
R211 1.2K
R212 1K
R213 820
C201 100P
C202 100P
C203 100P
C204 0.01
S206 (OPEN/CLOSE)
S207
S208
S209
S210
S211
S212 (AI EDIT)
S213 (REPEAT)
S214 (RANDOM)
S201 (DISC1)
S202 (DISC2)
S203 (DISC3)
S204 (DISC4)
S205 (DISC5)
D201-205
AABG4607K740
D206 SPR-305MDTF
D201 (DISC1)
D202 (DISC2)
D203 (DISC3)
D204 (DISC4)
D205 (DISC5)
R222 0Ω
R223 270
R224 270
R225 270
R226 270
R227 270
R204 330
R205 150
R206 150
R207 150
R208 150
R209 150

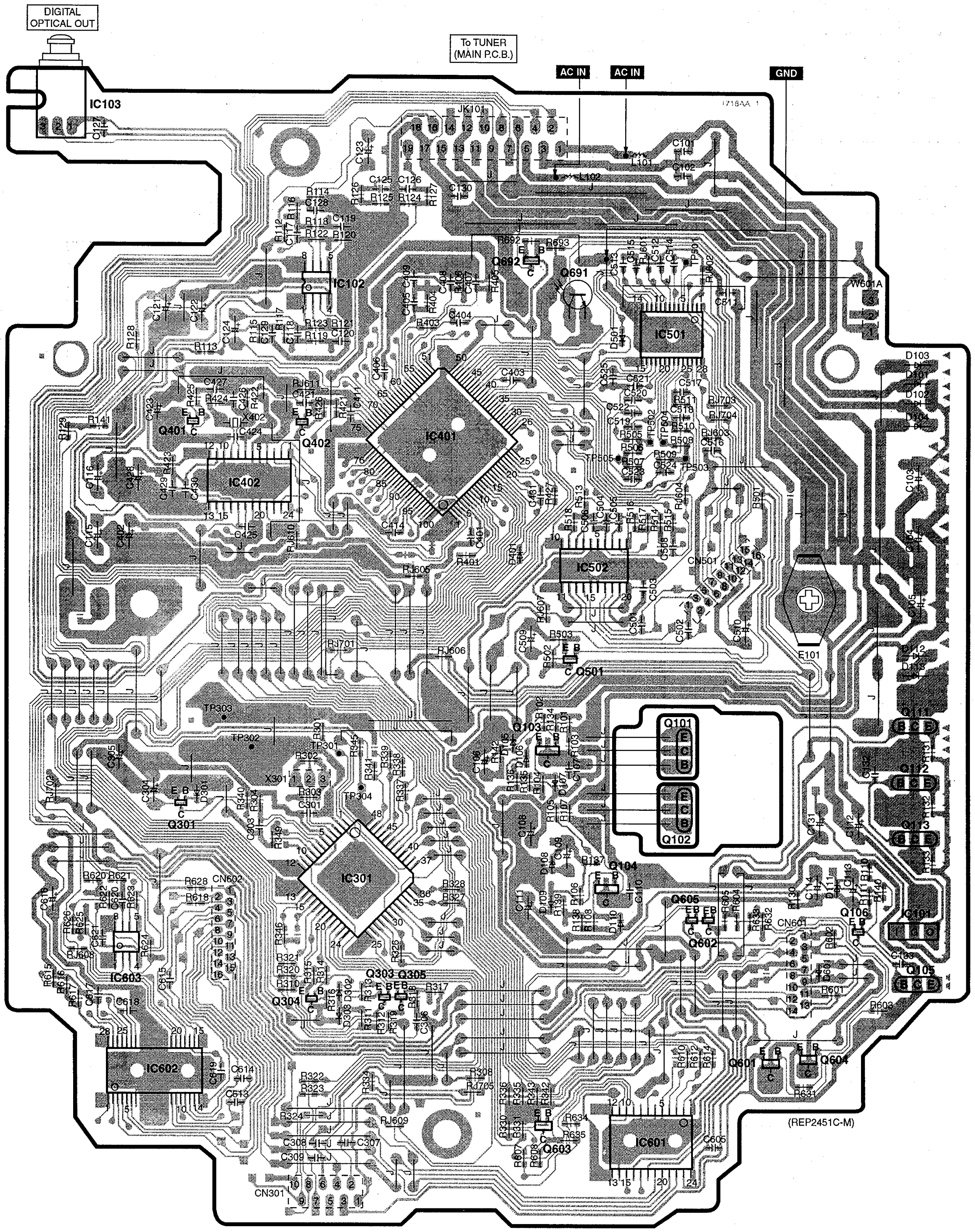


To TUNER(MAIN CIRCUIT)
JK101
AC1
REQ
CT
CS
AC2
DC.GND
CLK
DT
A.GND
T.GND
T.GND
VREF.GND
Rch OUT
A.GND
A.GND
Lch OUT
⚠Q111 - 113
2SD2137PQTA
REGULATOR
Q111
Q112
Q113
R131 1
R132 1
R133 1
D113 RL1N4003N02
D112 RL1N4003N02
⚠Q102
2SB1548PQAU
REGULATOR
⚠Q101
2SD2374PQAU
REGULATOR
D101 - 104 RL1N4003N02
⚠D101
⚠D102
⚠D103
⚠D104
⚠L101
⚠L102
AC IN
AC IN
GND
C103 25V1000
C104 25V1000
C105 25V1000
C110 1000P
C107 1000P
C108 10V220
C111 10V220
C131 10V47
C132 0.01
C101 0.01
C102 0.01
C106 16V47
C109 16V47
C130 1000P
D109 MA111TX
D106 MA111TX
D107 MA111TX
D110 MA111TX
⚠D108 MA8075MTX
⚠D105 MA8075MTX
R107 22K
R105 470
R137 470
R106 100
R108 82
R138 82
R139 82
R103 22K
R101 470
R134 470
R142 0Ω
R102 100
R104 82
R135 82
R136 82
⚠Q104
2SD874QRSTX
REGULATOR
⚠Q103
2SB766QRSTX
REGULATOR
7.2V 9.4V 7.8V
10.9V 10.3V 7.8V 7.5V 7V
-8.1V -13V -12.5V -7.9V -7.4V
(-8.1V)
R423 47
C425 0.01
C429 0.01
IC402
MN6475A - TI
D/A CONVERTER
Terminal guide: on pages 44,45
X OUT
C OUT
CSEL
DEMPH
WVEL
TP
PWL
RSTB
AVDDR
OUTR
AVssR
AVssL
LRCK
BCLK
SRDATA
COT1
COT2
TEST
DVDD
X2
X1
DVss
AVDDL
OUTL
PLAY
3.6V P-P
1kHz,0dB
0V 4.8V 4.7V 2.3V
2.4V 2.4V 0V (2.4V) 4.9V 2.2V 2.2V 4.7V 2.3V
R424 1M
R425 100
X402 (33.8MHz)
C424 0.1
C426 6P
C427 6P
C423 6.3V100
C430 0.01
1.1V P-P
F=33.8688MHz
Q401
UN5214TX
SWITCHING
10K 47K
C115 10V22
C116 10V22
C428 6.3V330
R112 1K
R113 1K
R114 100K
R115 100K
C128 2200P
C129 2200P
R116 4.7K
R117 4.7K
R118 4.7K
R119 4.7K
C119 560P
C120 560P
R120 27K
R121 27K
C117 1200P
C118 1200P
C123 10V22
C124 10V22
R126 220
R127 220
R122 3.3K
R123 3.3K
R125 47K
R124 47K
C125 1000P
C126 1000P
C121 10V47
C122 10V47
R128 100
R141 47
R129 47
PLAY
3.6V P-P
1kHz,0dB
4.7V -8V 0V
IC102
BA4558FHTT1
L.P.FILTER AMP
(4.9V)
(5V)
TP303
TP304
KEY & LED TEST
TP301
SERVO TEST
TP302
R345 10K
R341 47K
R340 5.6K
R301 10K
R339 470
R338 100
R337 470
R336 100K
R335 4.7K
R343 100K
R342 100K
R330 10K
R331 10K
R328 470
R327 470
X301 (4.23MHz)
R302 1M
R303 1K
R304 100K
C304 50V3.3
C307 1000P
C308 1000P
C309 1000P
C303 1000P
C301 0.1
C305 6.3V47
D301 MA111TX
Q301
UN5214TX
RESET
IC301
LC66538A4K20
SYSTEM CONTROL
Terminal guide: on page 40
TEST1
Vss
OSC1
OSC2
VDD
/RST
DISK
TRTIME
TEST
HOLD
LCLR
PLUNGER
TEST2
TGA IN
BLKCK
SOCK
DMUTE
SUBQ
CLOSE
OPEN
DOWN
POSITION
XCNT
PCUT
CCW
CW
STAT
REST SW
KEY2
KEY1
SENSOR
MCLK
MDATA
/MLD
NC
LDATA
SVRST
DACRST
HALF
HALF2
CS
REQ
DTI
DTO
CLK
PLUNGER2
LSTB
LCLK
3.8V P-P
F=4.23MHz
5.4V P-P
F=4.23MHz
PLAY
5V 0V
T=17ms.
PLAY
5V 0V
T=17ms.
R326 0Ω
R349 0Ω
R310 10K
R321 100
R320 1K
R346 0Ω
R322 100
R323 100
R324 100
R334 10K
R308 10K
CN301
Q303 - 305
2SD1819ASTX
SWITCHING
C306 100P
R319 1K
Q305
Q303
Q304
R317 4.7K
R318 4.7K
R313 10K
R311 22K
D302 MA111TX
D303 MA111TX
R312 47K
R316 47K
R314 4.7K
R315 4.7K
0.5V 1V 0.9V 0.4V 0V 0.4V

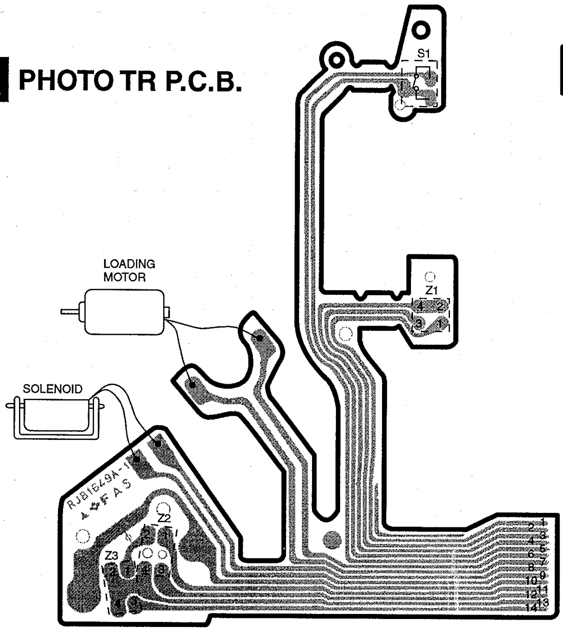
Printed Circiut Board Diagram

(This printed circuit board diagram may be modified at any time with the development of new technology.)

B MAIN P.C.B.

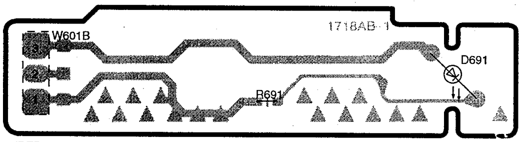

DIGITAL OPTICAL OUT
To TUNER (MAIN P.C.B.)
AC IN
AC IN
GND
IC103
JK101
L101
L102
C101
C102
IC102
IC401
IC402
IC501
IC502
IC301
IC601
IC602
IC603
IC101
Q401
Q402
Q501
Q691
Q692
Q101
Q102
Q103
Q104
Q105
Q106
Q111
Q112
Q113
Q301
Q303
Q304
Q305
Q601
Q602
Q603
Q604
Q605
W601A
D103
D101
D102
D501
X301
X402
E101
TP301
TP302
TP303
TP304
TP501
TP503
TP504
TP505
CN301
CN501
CN601
CN602
RJ601
RJ602
RJ603
RJ604
RJ605
RJ606
RJ607
RJ608
RJ609
RJ610
RJ701
RJ702
RJ703
RJ704
RJ705
(REP2451C-M)

A PHOTO TR P.C.B.


S1
LOADING MOTOR
SOLENOID
Z1
Z2
Z3
RJB1649A-1
1
2
3
4
5
6
7
8
9
10
11
12
13
14

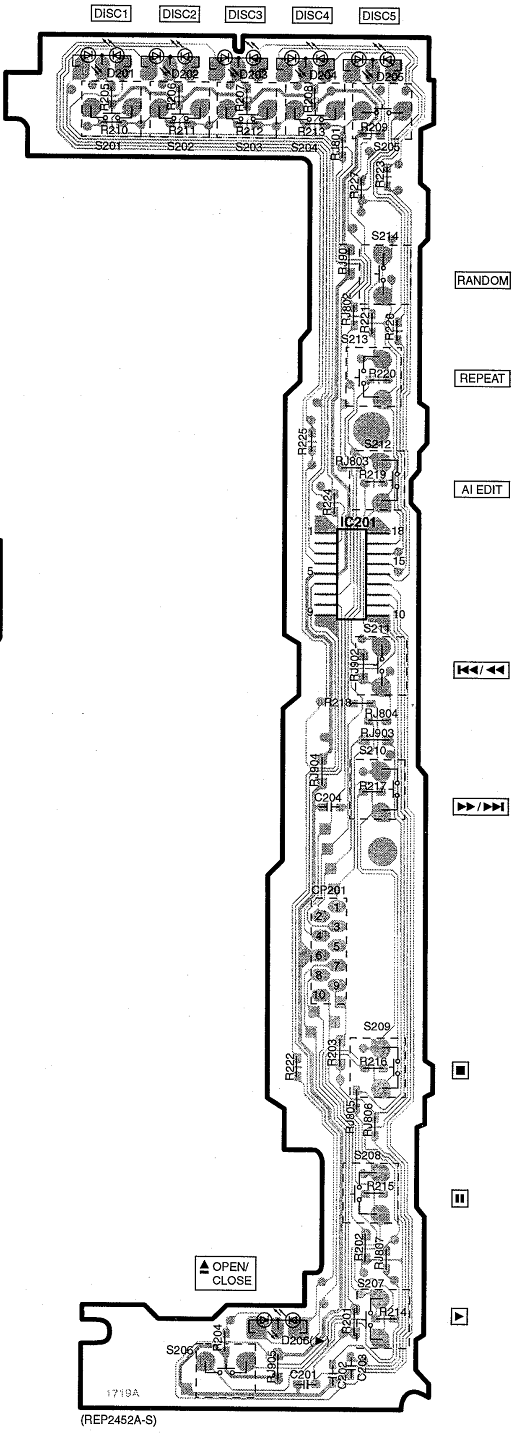
(REP2358A)

C SENSOR P.C.B.


W601B
1718AB-1
D691
R691
1
2
3

(REP2451C-M)

D OPERATION P.C.B.


DISC1
DISC2
DISC3
DISC4
DISC5
D201
D202
D203
D204
D205
R205
R206
R207
R208
R210
R211
R212
R213
R209
S201
S202
S203
S204
S205
RJ801
R227
R223
S214
RANDOM
RJ901
RJ802
R221
R226
S213
R220
REPEAT
R225
S212
RJ803
R219
AI EDIT
R224
IC201
S211
RJ902
R218
RJ804
RJ903
S210
RJ904
C204
R217
CP201
S209
R203
R216
R222
RJ805
RJ806
S208
R215
R202
RJ807
S207
R214
OPEN/ CLOSE
D206
S206
R204
RJ905
C201
C202
C203
R201
1719A

(REP2452A-S)

Terminal Function of IC's

● IC301 (LC66538A4K20): SYSTEM CONTROL

Pin No.	Mark	I/O Division	Function
1	TEST1	I	Test terminal
2	Vss	—	GND terminal
3	OSC1	I	Crystal OSC terminal (f=4.2336MHz)
4	OSC2	O	
5	VDD	I	Power supply input terminal
6	/RST	I	Reset signal input terminal
7	DISK	I	Disc detect input terminal
8	TRTIME	I	Time constant input terminal
9	TEST	I	Test terminal
10	HOLD	I	Not used, connected to VDD
11	LCLR	O	Clear output terminal
12	PLUNGER	O	Plunger (solenoid) control output terminal
13	SVRST	O	Reset signal output terminal
14	DACRST	O	Reset signal output terminal
15	HALF	O	Loading motor control output terminal
16	HALF2	O	Loading motor control output terminal (Not used, open)
17	CS	O	Communication chip select signal output terminal
18	REQ	I	Communication request signal input terminal
19	DTI	I	Communication data signal input/ output terminal
20	DTO	O	
21	CLK	O	Communication clock signal output terminal
22	PLUNGER2	O	Plunger (solenoid) control output terminal
23	LSTB	O	Storobe signal output terminal
24	LCLK	O	Command clock output terminal
25	LDATA	O	Command data output terminal
26	NC	—	Not used, open
27	/MLD	O	Command load signal output terminal
28	MDATA	O	Command data signal output terminal
29	MCLK	O	Command clock signal output terminal
30	SENSOR	O	LED sensor drive output terminal
31	KEY1	I	Key switch detect input terminal
32	KEY2	I	
33	REST SW	I	Rest position det. input terminal
34	STAT	I	Status signal input terminal
35	CW	O	Loading motor drive output terminal
36	CCW	O	
37	PCUT	O	Power control output terminal
38	XCNT	O	Crystal OSC control output terminal
39	POSITION	I	Sub tray position detect input terminal
40	DOWN	I	Sub tray "DOWN" det. input terminal
41	OPEN	I	Disc tray "OPEN" det. input terminal
42	CLOSE	I	Disc tray "CLOSE" det. input terminal
43	SUBQ	I	Sub-code Q data input terminal
44	DMUTE	O	Muting signal output terminal
45	SQCK	O	Sub-code Q register clock output terminal
46	BLKCK	I	Sub-code block clock input terminal (f=75Hz)
47	TGAIN	I	Not used, connected to external resistor
48	TEST2	I	Test terminal

● IC401 (MN662743CDC1): SERVO PROCESSOR / DIGITAL SIGNAL PROCESSOR / DIGITAL FILTER / D/A CONVERTER

Pin No.	Mark	I/O Division	Function
1	BCLK	O	Bit clock output for serial data
2	LRCK	O	L/R identification signal output ("H": L-ch audio data, "L": R-ch audio data)
3	SRDATA	O	Serial data output
4	DVDD1	I	Power supply input (for digital circuit)
5	DVSS1	—	GND terminal (for digital circuit)
6	TX	O	Digital audio interface signal output
7	MCLK	I	Microprocessor command clock signal input (Latches data at first transition)
8	MDATA	I	Microprocessor command data signal input
9	MLD	I	Microprocessor command load signal input ("L": load)
10	SENSE	O	Sense signal output (OFT, FESL, NACEND, NAJEND, POSAD, SFG, NWTEND) (Not used, open)
11	/FLOCK	O	Focus servo feeding signal output ("L" : Feed) (Not used, open)
12	/TLOCK	O	Tracking servo feeding signal output ("L" : Feed) (Not used, open)
13	BLKCK	O	Sub-code block clock signal output (f=75 Hz)
14	SQCK	I	External clock signal input for sub-code Q resister
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting signal input ("H" : MUTE)
17	STAT	O	Status signal output (CRC, CUE, CLVS, TTSTVP, FCLV, SQCK, FLAG6, SENSE, /FLOCK, /TLOCK)
18	/RST	I	Reset signal input ("L" : reset) at IOSEL="L": (472ns and over="L")
19	SMCK	O	Clock signal output at MSEL="H" (8.4672 MHz) at MSEL="L" (16.9344 MHz) (Not used, open)
20	PMCK	O	Clock signal output (88.2kHz) (Not used open)
21	SPARI	I	Test terminal (normally "L")
22	SPARO	O	Test terminal (normally "open")
23	/QVEL	O	Quadruple speed status signal output ("L" : quadruple speed)(Not used, open)
24	TESTMI	I	Test terminal (pull-down terminal) (normally "L")
25	PRUN	O	Optical pickup tracking detection signal output (Not used, open)
26	TRV	O	Traverse forced feed signal output (Not used, open)
27	TVD	O	Traverse drive signal output

Pin No.	Mark	I/O Division	Function
28	PC	O	Spindle motor ON signal output ("L": ON, default)
29	ECM	O	Spindle motor drive signal output (forced mode output)
30	ECS	O	Spindle motor drive signal output (Servo error signal output)
31	KICK	O	Kick pulse output
32	TRD	O	Tracking drive signal output
33	TESTX	I	Test terminal (normally "L")
34	FOD	O	Focus drive signal output
35	DIRC	O	Optical pickup tracking direction detection signal (Not used, open)
36	VREF	I	Reference voltage input of D/A(drive) output (TVD, ECS, TRD, FOD, FBAL, TBAL, TOFS)
37	FBAL	O	Focus balance adjustment signal output
38	DVDD2	I	Power supply input (for digital circuit)
39	TBAL	O	Tracking balance adjustment signal output
40	DVSS2	—	GND terminal (for digital circuit)
41	FE	I	Focus error signal input (analog input)
42	TE	I	Tracking error signal input (analog input)
43	RFENV	I	RF envelope signal input (analog input)
44	VDET	I	Vibration detection signal input ("H": detectoion)
45	OFT	I	Off-track signal input ("H": off track)
46	TRCRS	I	Track cross signal input
47	/RFDET	I	RF detection signal input ("L": detection)
48	BDO	I	Dropout signal input ("H": Dropout)
49	LDON	O	Laser on signal output ("H": ON)
50	EXTROM	I	Test terminal (normally "L")
51	TES	O	Tracking error shunt signal output ("H": shunt) (Not used, open)
52	PLAY	O	Play signal out ("H": PLAY) (Not used, open)
53	/WVEL	O	Double speed status signal output ("L": Double speed) (Not used, open)
54	ARF	I	RF signal input
55	IREF	I	Reference current input terminal

Pin No.	Mark	I/O Division	Function
56	DRF	I	DSL bias terminal (Not used, open)
57	DSLF	I/O	DSL loop filter terminal
58	PLLF	I/O	PLL loop filter terminal
59	TESTR	I	Test terminal (EXIREF) (normally "L")
60	EXPLLF	O	Test terminal (normally "open")
61	VCOF	I/O	VCO loop filter terminal (Not used, connected to GND)
62	EXPCK	O	Test terminal (normally "open")
63	AVDD2	I	Power supply input for analog circuit (DSL, PLL, DA OUTPUT, AD
64	AVss2	—	GND terminal for analog circuit (DSL, PLL, DA OUTPUT, AD)
65	BUFOUT	O	Test terminal (normally "open")
66	EFM	O	at IOSEL="H"; EFM signal output at IOSEL="L"; Clock signal output (16.9344 MHz) (Not used, open)
67	DSLOUT	O	Test terminal (normally "open")
68	PCK	O	PLL extraction clock signal output (fPCK=4.321 MHz) (Not used, open)
69	TOFS	O	Tracking offset adjustments signal output
70	SUBC	O	Sub-code serial data output (Not used, open)
71	SBCK	I	Clock signal input for sub-code serial data (Not used, connected to GND)
72	Vss	—	GND terminal (for oscillating circuit)
73	X1	I	Crystal oscillating circuit output (f=33.8688 MHz)
74	X2	O	Crystal oscillating circuit output (f=33.8688 MHz)
75	VDD	I	Power supply input (for oscillating circuit)
76	BYTCK	O	at IOSEL="H" Byte clock signal output at IOSEL="L" Traverse stop signal output ("H": stop mode) (Not used, open)
77	TESTC	I	Test terminal (EXPCKIN) (normally"L")
78	/CLDCK	O	Sub-code frame clock signal output (fCLDCK=7.35kHz) (Not used, open)
79	TESTE	I	Test terminal (EXEFMIN) (normally"L")
80	FCLK	O	Crystal frame clock signal output (fFCLK=7.35kHz) (Not used, open)
81	IPFLAG	O	Interpolation flag signal output ("H": Interpolation) (Not used, open)
82	FLH	O	Speed detection result output (3-state output) (Not used, open)
83	FLAG	O	Flag signal output (Not used, open)
84	NC6(PL)	O	Test terminal (normally "open")
85	NC7(PH)	O	Test terminal (normally "open")
86	CLVS	O	Spindle servo phase synchronizing signal output (Not used, open) ("H": CLV, "L": rough servo)
87	CRC	O	Sub-code CRC checked result output ("H": OK, "L": NG) (Not used, open)
88	DEMPH	O	De-emphasis detection signal output ("H": ON)
89	RESY	O	at IOSEL="H"; Frame sync. resynchronization signal output "H": pull in "L": pull out at IOSEL="L"; Error correction deinterleaving RAM address reset signal FLAG6 output "L": address reset generation (Not used, open)
90	IOSEL	I	Mode switching terminal
91	/TEST	I	Test terminal (normally "L")
92	AVDD1	I	Power supply terminal for analog circuit [for audio output (use as L-ch and R-ch)]
93	OUTL	O	Left channel audio signal output (Not used, open)
94	AVss1	—	GND terminal for analog circuit [for audio output (use as L-ch and R-ch)]
95	OUTR	O	Right chennel audio signal output
96	RSEL	I	RF signal polarity assignment terminal (at "H" level: RSEL= "H") (at "L" level: RSEL= "L")
97	CSEL	I	Crystal oscillating frequency designation input ("H": 33.8688MHz)
98	PSEL/ SRDATAIN	I	at IOSEL="H" Test terminal (normally "L") at IOSEL="L" SRDATA input terminal
99	MSEL/ LRCKIN	I	at IOSEL="H" Output freqency switching of SMCK terminal "H": SMCK=8.4672MHz "L": SMCK=16.9344MHz at IOSEL="L" LRCK input terminal "H": L-ch data, "L": R-ch data (SMCK terminal output=16.9344MHz)
100	SSEL/ BCLKIN	I	at IOSEL="H" Output mode switching of SUBQ terminal "H": Q code buffer mode at IOSEL="L" BCLK input terminal "H": L-ch data, "L": R-ch data (SUB Q terminal output mode=Q code buffer mode)

● IC601 (AN8389SE1): LOADING MOTOR / TRAVERSE MOTOR DRIVE

Pin No.	Mark	I/O Division	Function
1	Vcc	I	Power supply terminal
2	VREF	I	Reference voltage input terminal
3	IN4	I	Traverse motor driver (4) input
4	IN3	I	Traverse motor driver (3) input
5	GND	I	GND terminal (Connected to negative voltage)
6	NC	I	Not used, connected to negative voltage
7	/RST	O	Reset terminal (Not used, open)
8	GND	I	GND terminal (Connected to negative voltage)
9	IN2	O	Loading motor driver (2) input
10	PC2	I	Loading motor drive signal (" L " : ON)
11	IN1	I	Loading motor driver (1) input
12	PC1	I	Loading motor drive signal (" L " : ON)
13	PVcc1	I	Driver power supply terminal (1)
14	PGND1	I	Driver GND terminal (1) (Connected to negative voltage)
15	D1-	O	Motor driver (1) output terminal (-) (Not used, open)
16	D1+	O	Loading motor driver (1) output terminal (+)
17	D2-	O	Motor driver (2) output terminal (-) (Not used, open)
18	D2+	O	Motor driver (2) output terminal (+)
19	D3-	O	Traverse motor driver (3) output terminal (-)
20	D3+	O	Traverse motor driver (3) output terminal (+)
21	D4-	O	Traverse motor driver (4) output terminal (-)
22	D4+	O	Traverse motor driver (4) output terminal (+)
23	PGND2	I	Driver GND terminal (2) (Connected to negative voltage)
24	PVcc2	I	Driver power supply (2) (Not used, connected to GND)

● IC502 (AN8387SE2): FOCUS COIL/TRACKING COIL DRIVE

Pin No.	Mark	I/O Division	Function
1	SVcc	I	Power supply terminal
2	IN1	I	Tracking coil drive input terminal
3	PC1	I	Power control input terminal (Not used, connected to GND)
4	VREF	I	Reference voltage input terminal
5	PGND	—	GND terminal
6	PGND	—	GND terminal
7	SGND	—	GND terminal
8	PC2	I	Power control input terminal (Not used, connected to GND)
9	IN2	I	Focus coil drive input terminal
10	SVcc	I	Power supply terminal
11	VLIM2	I	Voltage limit terminal
12	PVcc	I	Power supply terminal
13	D2+	O	Focus coil drive output terminal (+)
14	D2-	O	Focus coil drive output terminal (-)
15	PGND	—	GND terminal
16	PGND	—	GND terminal
17	D1-	O	Tracking coil drive output terminal (-)
18	D1+	O	Tracking coil drive output terminal (+)
19	PVcc	I	Power supply terminal
20	VLIM1	I	Voltage limit terminal

● IC501 (AN8835SBE1): SERVO AMP

Pin No.	Mark	I/O Division	Function
1	PDA	I	Focus signal input terminal (1) (Ach)
2	PDB	I	Focus signal input terminal (2) (Bch)
3	Vcc	I	Power supply terminal
4	LPD	I	APC amp input terminal
5	LD	O	APC amp output terminal
6	RF	O	RF summing output terminal
7	RF IN	I	AGC input terminal
8	CAGC	I	AGC detection capacitor input
9	ARF	O	RF signal output terminal
10	CSBRT	I	Capacitor connection terminal for OFTR
11	CEA	I	Capacitor connection terminal for H.P.F. amp
12	BDO	O	Dropout signal output terminal ("H" : Dropout)
13	LDON	I	APC control input terminal (" H " : ON, " L " : OFF)
14	GND	—	GND terminal
15	/RFDET	O	RF det. signal output terminal ("L" : Det.)
16	CROSS	O	Track cross signal output terminal
17	OFTR	O	Off track signal output terminal ("H" : Off track)
18	VDET	O	Vibration det. signal output terminal ("H" : Det.)
19	ENV	O	RF envelope signal output termina
20	TEBPF	I	Oscillation detect input terminal (Not used, connected to capacitor)
21	CCRS	I	CROSS capacitor connection terminal
22	TE	O	Tracking error amp output terminal
23	FE	O	Focus error amp output terminal
24	TBAL	I	Tracking balance adj. input terminal
25	FBAL	I	Focus balance adj. input terminal
26	VREF	O	Reference voltage output terminal
27	PDE	I	Tracking signal input terminal (1) (E ch)
28	PDF	I	Tracking signal input terminal (2) (F ch)

● IC402 (MN6475A-T1): D/A CONVERTER

Pin No.	Mark	I/O Division	Function
1	LRCK	I	L/R channel discrimination input terminal
2	BCLK	I	Bit clock input terminal
3	SRDATA	I	Serial data input terminal
4	COT1	I	Signal selection output terminal (COT1: L / COT2: L ; Normal, stereo signal output)
5	COT2	I	
6	TEST	I	Test terminal (Normal "L")
7	DVDD	I	Power supply terminal
8	X2	O	Crystal OSC terminal (f=33.8688MHz)
9	X1	I	
10	DVSS	—	GND terminal
11	AVDDL	I	Power supply (L channel) terminal
12	OUTL	O	L channel analog signal output terminal

Pin No.	Mark	I/O Division	Function
13	AVssL	—	GND (L channel) terminal
14	AVssR	—	GND (L channel) terminal
15	OUTR	O	R channel analog signal output terminal
16	AVDDR	I	Power supply (R channel) terminal
17	RSTB	I	Reset signal input terminal
18	PWL	—	Not used, open

Pin No.	Mark	I/O Division	Function
19	TP	—	Not used, connected to GND
20	WVEL	—	Not used, connected to GND
21	DEMPH	I	De-emphasis on/off control terminal (De-emphasis on: H)
22	CSEL	I	Frequency select(COUT) input terminal (1/4f:" L", 1/2f: "H")
23	COUT	O	Frequency (192fs) clock output terminal (Not used, open)
24	XOUT	O	Frequency (384fs) clock output terminal (Not used, open)

● IC602 (NBC3903MT1): SPINDLE MOTOR DRIVE

Pin No.	Mark	I/O Division	Function
1	NC	—	Not used, open
2	NC	—	Not used, open
3	A3	O	Spindle motor drive output terminal
4	NC	—	Not used, open
5	A2	O	Spindle motor drive output terminal
6	A1	O	Spindle motor drive output terminal
7	GND	—	GND terminal
8	H1+	I	Hall element detect (+) input terminal
9	H1-	I	Hall element detect (-) input terminal
10	NC	—	Not used, open
11	NC	—	Not used, open
12	H2+	I	Hall element detect (+) input terminal
13	H2-	I	Hall element detect (-) input terminal
14	H3+	I	Hall element detect (+) input terminal

Pin No.	Mark	I/O Division	Function
15	H3-	I	Hall element detect (-) input terminal
16	VH	O	Hall element bias output terminal
17	CNF	I	Time constant control terminal
18	NC	—	Not used, open
19	ECR	I	Torque sense amp (-) input terminal
20	EC	I	Torque sense amp (+) input terminal
21	PS	I	Power control input terminal
22	NC	—	Not used, open
23	Vcc	I	Power supply terminal
24	NC	—	Not used, open
25	NC	—	Not used, open
26	VM	I	Power supply terminal
27	NC	—	Not used, open
28	RNF	I	Current sense amp (-) and coil driver input terminal

■ Replacement Parts List

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

- * The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.
- * Warning: This product uses a laser diode. Refer to caution statements on page 2.
- * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
- * Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RGK0817-1M	SIDE PANEL(L)	1	
2	RGK0818-1M	SIDE PANEL(R)	1	
3	RHD30073-K	SCREW	4	
4	RMZ0420	INSULATION SHEET	1	
5	RQLA0384	CAUTION GUIDE	1	
6	XTBS3+8JFZ1	SCREW	7	
7	RMR1038-K	SENSOR HOLDER(D691)	1	
8	RMR1039-K	SENSOR HOLDER(Q691)	1	
9	RYQ0240-S	TRAY ORNAMENT	1	
10	XTB3+6G	SCREW	4	
11	RHD26027-K	SCREW	4	
12	RKA0076-N	FOOT	4	
13	RMB0518	FLOATING SPRING(A)	3	
14	RMB0519	FLOATING SPRING(B)	1	
15	RMG0455-K	FLOATING RUBBER	4	
16	XTB3+12JFZ	SCREW	10	
17	XTB3+6JFZ	SCREW	2	
18	XTN26+6G	SCREW	1	
19	RMZ0415	INSULATION SHEET	1	
20	RMR1040-K3	L.E.D.HOLDER	1	
21	RFKGLHD81E-N	FRONT PANEL ASS'Y	1	
22	RGK0819-N3	SIDE ORNAMENT(L)	1	
23	RGK0820-N3	SIDE ORNAMENT(R)	1	
24	RGL0346-Q	DISC INDEX	5	
25	RGL0347-Q	L.E.D. INDEX	1	
26	RGU1484-S	OPERATION BUTTON(A)	1	
27	RGU1485-S	OPERATION BUTTON(B)	1	
28	RGU1486-S2	DISC BUTTON	1	
29	XQN26+AJ6FZ	SCREW	5	
30	SHE170-2	P.C.B.HOLDER	4	
⚠ 101	RAE0161Z	TRAVERSE DECK	1	
101-1	RAF0140A	OPTICAL PICKUP	1	
101-2	RFKPQTC500NP	SPINDLE MOTOR ASS'Y	1	
101-3	XQN17+CF6	SCREW	1	
101-4	XQN17+CF8	SCREW	1	
101-5	XQN17+CG45	SCREW	1	
101-6	XQN17+CM25	SCREW	2	
102	RFKNQTC500NA	ELEVATION BASE ASS'Y	1	
103	RFKNQTC500NB	CLAMP TRIGGER ASS'Y	1	
104	RFKNQTC500NC	E.SEMICIRCULAR PLATE ASS'Y	1	
105	RXK0208	MECHANISM CHASSIS ASS'Y	1	
106	RFKNQTC500NE	CLAMP RACK PLATE ASS'Y	1	
107	RFKNQTC500NF	CLAMPER ASS'Y	1	
108	RMC0304-1	TRAVERSE SPRING PLATE	1	
109	RHD20040	SCREW	2	
110	RMC0305-1	CLAMP RACK HOLDER	1	
111	RMB0480	TRIGGER SPRING	1	
112	RMQ0604	SUB TRAY GUIDE(L)	1	
113	RMQ0605	SUB TRAY GUIDE(R)	1	
114	XQN2+A2	SCREW	4	
115	XQN2+A25	SCREW	2	
116	XWA2B	WASHER	1	
117	XWE2	WASHER	1	
118	XQN2+AF3	SCREW	4	
119	XWA2B	WASHER	4	
120	RXL0137	CONVERSION LEVER UNIT	1	
121	RXL0138	ELEVATION LEVER UNIT	1	
122	RMR0996-C1	SUB TRAY	5	
123	RMQ0607	DISC HOLDER	1	
124	RMC0303	SUB TRAY SPRING PLATE	1	
125	RML0448	MAIN TRAY HOOK	1	
126	RMR0995-H	MAIN TRAY	1	
127	RMR0998-H	MAIN TRAY COVER	1	
128	REM0065	LOADING MOTOR ASS'Y	1	
128-1	RMQ0603	MOTOR ANGLE	1	
128-2	XYN2+C3	SCREW	2	
129	RMM0157-1	CONNECTING LINK PLATE	1	
130	XQN2+A22FZ	SCREW	1	
131	XQN2+BJ5	SCREW	5	
132	XYN2+C6	SCREW	4	
133	RDG0358	ELEVATION GEAR	1	
134	RDG0360	MOTOR REDUCTION GEAR(A)	1	
135	RDG0361	ELEVATION TRANSMISSION GEAR	4	
136	RDG0362	MODE REDUCTION GEAR	1	
137	RDG0363	CONVER.REDUCTION GEAR(A)	2	
138	RDG0364	CONVER.REDUCTION GEAR(B)	1	
139	RDG0365	LOAD GEAR(A)	1	
140	RDG0366	LOAD GEAR(B)	1	
141	RDG0367	M TRAY GEAR	1	
142	RDG0368	S TRAY GEAR(A)	1	
143	RDG0369	S TRAY GEAR(B)	2	
144	RDG0370	S TRAY GEAR(C)	1	
145	RDG0371	MOTOR REDUCTION GEAR(B)	1	
146	RDG0372	MODE SELECT GEAR	1	
147	RDK0028	LOAD MAIN GEAR	1	
148	RDK0029	ELEVATION CAM	1	
149	RDK0030	CONVERSION CAM	1	
151	RHW12008	WASHER	3	
152	RHW15002	WASHER	2	
153	RHW26008	WASHER	1	
154	RMA0956	ELEVATION GEAR HOLDER	1	
155	RME0213	CONVERSION LEVER SPRING	1	
156	RME0214	MODE CONTROL SPRING	1	
157	RME0219	MODE LOCK LEVER SPRING	1	
158	RME0222	STOPPER SPRING	1	
159	RXQ0500	STEP CAM(L) ASS'Y	1	
160	RXQ0499	STEP CAM(R) ASS'Y	1	
161	RML0445	SUB TRAY HOOK	4	
162	RML0446	MODE CONTROL LEVER	1	
163	RML0447	MODE LOCK LEVER	1	
164	RML0459	DISC STOPPER	1	
165	RMQ0608-2	GEAR COVER	1	
166	RSJ0016-1	PLUNGER	1	
167	RFKNLHD70EBN	MECH.CHASSIS BRACKET ASS'Y	1	
168	RFKNLHD70ECN	DISC SPACER ASS'Y	1	
C101,02	ECUV1H103KBN	50V 0.01U	2	
⚠ C103-05	ECA1EM102B	25V 1000U	3	
C106	RCE1CKS470BV	16V 47U	1	
C107	ECUV1H102KBN	50V 1000P	1	
C108	ECEA1AKS221	10V 220U	1	
C109	RCE1CKS470BV	16V 47U	1	
C110	ECUV1H102KBN	50V 1000P	1	
C111	ECEA1AKS221	10V 220U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C112	ECEA0JKA221B	6.3V 220U	1	
C113	RCE1AKA470BG	10V 47U	1	
C114	ECEA0JKA221B	6.3V 220U	1	
C115,16	ECEA1AKA220B	10V 22U	2	
C117,18	ECUV1H122KBN	50V 1200P	2	
C119,20	ECUV1H561KBN	50V 560P	2	
C121,22	RCE1AKA470BG	10V 47U	2	
C123,24	ECEA1AKA220B	10V 22U	2	
C125,26	ECUV1H102KBN	50V 1000P	2	
C127	ECUV1H103KBN	50V 0.01U	1	
C128,29	ECUV1H222KBN	50V 2200P	2	
C130	ECUV1H102KBN	50V 1000P	1	
C131	RCE1AKA470BG	10V 47U	1	
C132,33	ECUV1H103KBN	50V 0.01U	2	
C201-03	ECUV1H101JCN	50V 100P	3	
C204	ECUV1H103KBN	50V 0.01U	1	
C301	ECUV1H104ZFM	50V 0.1U	1	
C303	ECUV1H102KBN	50V 1000P	1	
C304	RCE1HKA3R3BG	50V 3.3U	1	
C305	ECEA0JKA470B	6.3V 47U	1	
C306	ECUV1H101JCN	50V 100P	1	
C307-09	ECUV1H102KBN	50V 1000P	3	
C401	ECUV1E104ZFN	25V 0.1U	1	
C402	ECEA0JKA101B	6.3V 100U	1	
C403	ECUV1E104ZFN	25V 0.1U	1	
C404	ECUV1H561KBN	50V 560P	1	
C405	ECUV1H102KBN	50V 1000P	1	
C406	ECUV1E104ZFN	25V 0.1U	1	
C407	ECUV1E223KBN	25V 0.022U	1	
C408	ECUV1E123KBN	25V 0.012U	1	
C409	ECUV1C224KBN	16V 0.22U	1	
C411	ECUV1H104ZFM	50V 0.1U	1	
C414	ECUV1E104ZFN	25V 0.1U	1	
C421	ECUV1H101JCN	50V 100P	1	
C423	ECEA0JKA101B	6.3V 100U	1	
C424	ECUV1H104ZFM	50V 0.1U	1	
C425	ECUV1H103KBN	50V 0.01U	1	
C426,27	ECUV1H060DCN	50V 6P	2	
C428	ECEA0JKA331B	6.3V 330U	1	
C429,30	ECUV1H103KBN	50V 0.01U	2	
C431	ECUV1H102KBN	50V 1000P	1	
C501-05	ECUV1E104ZFN	25V 0.1U	5	
C506	ECUV1H103KBN	50V 0.01U	1	
C508	ECUV1H681KBN	50V 680P	1	
C509	ECEA1CKA330B	16V 33UF	1	
C510	ECEA0JKA101B	6.3V 100U	1	
C511	ECUV1H104ZFM	50V 0.1U	1	
C512	ECUV1E104ZFN	25V 0.1U	1	
C513	ECUV1E273KBN	25V 0.027U	1	
C514	ECUV1E104ZFN	25V 0.1U	1	
C515	ECUV1H272KBN	50V 2700P	1	
C516	ECUV1E104ZFN	25V 0.1U	1	
C517,18	ECUV1H103KBN	50V 0.01U	2	
C519	ECUV1C104KBN	16V 0.1U	1	
C520	ECUV1H472KBN	50V 4700P	1	
C521	ECUV1E273KBN	25V 0.027U	1	
C522	ECUV1C473KBN	16V 0.047U	1	
C523	ECUV1H332KBN	50V 3300P	1	
C524	ECUV1H222KBN	50V 2200P	1	
C525	ECUV1H471KBM	50V 470P	1	
C605	ECUV1E104ZFN	25V 0.1U	1	
C613-15	ECUV1H103KBN	50V 0.01U	3	
C616	ECEA1HKA2R2B	50V 2.2U	1	
C617,18	ECUV1E104ZFN	25V 0.1U	2	
C619	ECUV1C104KBN	16V 0.1U	1	
C620	ECUV1E333KBN	25V 0.033U	1	
C621	ECUV1E104ZFN	25V 0.1U	1	
CN301	RJU099W10	SOCKET(10P)	1	
CN501	RJS2A4716M	CONNECTOR(16P)	1	
CN601	RJS2A4714M	CONNECTOR(14P)	1	
CN602	RJS2A4716M	CONNECTOR(16P)	1	
CP201	RJT099W10-1	CONNECTOR(10P)	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ D101-04	RL1N4003N02	DIODE	4	
⚠ D105	MA8075MTX	DIODE	1	
D106,07	MA111TX	DIODE	2	
⚠ D108	MA8075MTX	DIODE	1	
D109,10	MA111TX	DIODE	2	
⚠ D111	MA8056MTX	DIODE	1	
D112,13	RL1N4003N02	DIODE	2	
D201-05	AABG4607K740	L.E.D.	5	
D206	SPR-305MDTF	L.E.D.	1	
D301-03	MA111TX	DIODE	3	
D401	MA111TX	DIODE	1	
D501	MA111TX	DIODE	1	
D601	MA112TX	DIODE	1	
D691	LN57AU	L.E.D.	1	
⚠ IC101	LM2940T5M	IC	1	
IC102	BA4558FHTT1	IC	1	
IC103	TOTX178	IC	1	
IC201	NJU3713GTE1	IC	1	
IC301	LC66538A4K20	IC	1	
IC401	MN662743CDC1	IC	1	
IC402	MN6475A-T1	IC	1	
IC501	AN8835SBE1	IC	1	
IC502	AN8387SE2	IC	1	
IC601	AN8389SE1	IC	1	
IC602	NBC3903MT1	IC	1	
IC603	NJM2115MTE1	IC	1	
JK101	RJT065K19	SYSTEM CONNECTOR(19P)	1	
⚠ L101,02	RLBN300AV-W	COIL	2	
⚠ Q101	2SD2374PQAU	TRANSISTOR	1	
⚠ Q102	2SB1548PQAU	TRANSISTOR	1	
⚠ Q103	2SB766QRSTX	TRANSISTOR	1	
⚠ Q104	2SD874QRSTX	TRANSISTOR	1	
⚠ Q105	2SB1417PQTA	TRANSISTOR	1	
⚠ Q106	2SD1819ASTX	TRANSISTOR	1	
⚠ Q111-13	2SD2137PQTA	TRANSISTOR	3	
Q301	UN5214TX	TRANSISTOR	1	
Q303-05	2SD1819ASTX	TRANSISTOR	3	
Q401,02	UN5214TX	TRANSISTOR	2	
Q501	2SB709ATX	TRANSISTOR	1	
Q601	2SB956RTX	TRANSISTOR	1	
Q602	UN5214TX	TRANSISTOR	1	
Q603	UN5112TX	TRANSISTOR	1	
Q604	2SB956RTX	TRANSISTOR	1	
Q605	UN5214TX	TRANSISTOR	1	
Q691	PT381	TRANSISTOR	1	
Q692	2SB709ATX	TRANSISTOR	1	
R101	ERJ6GEYJ471V	1/10W 470	1	
R102	ERJ6GEYJ101Z	1/10W 100	1	
R103	ERJ6GEYJ223V	1/10W 22K	1	
R104	ERJ6GEYJ820V	1/10W 82	1	
R105	ERJ6GEYJ471V	1/10W 470	1	
R106	ERJ6GEYJ101Z	1/10W 100	1	
R107	ERJ6GEYJ223V	1/10W 22K	1	
R108	ERJ6GEYJ820V	1/10W 82	1	
R110	ERJ6GEYJ471V	1/10W 470	1	
R111	ERJ6GEYJ101Z	1/10W 100	1	
R112,13	ERJ6GEYJ102Z	1/10W 1K	2	
R114,15	ERJ6GEYJ104V	1/10W 100K	2	
R116-19	ERJ6GEYJ472V	1/10W 4.7K	4	
R120,21	ERJ6GEYJ273V	1/10W 27K	2	
R122,23	ERJ6GEYJ332V	1/10W 3.3K	2	
R124,25	ERJ6GEYJ473V	1/10W 47K	2	
R126,27	ERJ6GEYJ221V	1/10W 220	2	
R128	ERJ6GEYJ101Z	1/10W 100	1	
R129	ERJ6GEYJ470V	1/10W 47	1	
R130	ERJ6GEYJ472V	1/10W 4.7K	1	
R131-33	ERJ6GEYJ1R0V	1/10W 1	3	
R134	ERJ6GEYJ471V	1/10W 470	1	
R135,36	ERJ6GEYJ820V	1/10W 82	2	
R137	ERJ6GEYJ471V	1/10W 470	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R138,39	ERJ6GEYJ820V	1/10W 82	2	
R140	ERJ6GEYJ471V	1/10W 470	1	
R141	ERJ6GEYJ470V	1/10W 47	1	
R142	ERJ6GEY0R00Z	CHIP JUMPER	1	
R201-03	ERJ8GEYJ101V	1/8W 100	3	
R204	ERJ6GEYJ331V	1/10W 330	1	
R205-09	ERJ6GEYJ151V	1/10W 150	5	
R210	ERJ6GEYJ152V	1/10W 1.5K	1	
R211	ERJ6GEYJ122V	1/10W 1.2K	1	
R212	ERJ6GEYJ102Z	1/10W 1K	1	
R213,14	ERJ6GEYJ821V	1/10W 820	2	
R215	ERJ6GEYJ102Z	1/10W 1K	1	
R216	ERJ6GEYJ122V	1/10W 1.2K	1	
R217	ERJ6GEYJ152V	1/10W 1.5K	1	
R218	ERJ6GEYJ182V	1/10W 1.8K	1	
R219	ERJ6GEYJ222V	1/10W 2.2K	1	
R220	ERJ6GEYJ332V	1/10W 3.3K	1	
R221	ERJ6GEYJ472V	1/10W 4.7K	1	
R222	ERJ6GEY0R00Z	CHIP JUMPER	1	
R223-27	ERJ6GEYJ271V	1/10W 270	5	
R301	ERJ6GEYJ103V	1/10W 10K	1	
R302	ERJ8GEYJ105V	1/8W 1M	1	
R303	ERJ8GEYJ102V	1/8W 1K	1	
R304	ERJ6GEYJ104V	1/10W 100K	1	
R308	ERJ6GEYJ103V	1/10W 10K	1	
R310	ERJ6GEYJ103V	1/10W 10K	1	
R311	ERJ8GEYJ223V	1/8W 22K	1	
R312	ERJ6GEYJ473V	1/10W 47K	1	
R313	ERJ6GEYJ103V	1/10W 10K	1	
R314,15	ERJ6GEYJ472V	1/10W 4.7K	2	
R316	ERJ6GEYJ473V	1/10W 47K	1	
R317,18	ERJ6GEYJ472V	1/10W 4.7K	2	
R319,20	ERJ6GEYJ102Z	1/10W 1K	2	
R321-23	ERJ6GEYJ101Z	1/10W 100	3	
R324	ERJ8GEYJ101V	1/8W 100	1	
R326	ERJ8GEY0R00V	CHIP JUMPER	1	
R327,28	ERJ8GEYJ471V	1/8W 470	2	
R330,31	ERJ8GEYJ103V	1/8W 10K	2	
R334	ERJ6GEYJ103V	1/10W 10K	1	
R335	ERJ8GEYJ472V	1/8W 4.7K	1	
R336	ERJ8GEYJ104V	1/8W 100K	1	
R337	ERJ6GEYJ471V	1/10W 470	1	
R338	ERJ6GEYJ101Z	1/10W 100	1	
R339	ERJ6GEYJ471V	1/10W 470	1	
R340	ERJ6GEYJ562V	1/10W 5.6K	1	
R341	ERJ6GEYJ473V	1/10W 47K	1	
R342,43	ERJ8GEYJ104V	1/8W 100K	2	
R345	ERJ6GEYJ103V	1/10W 10K	1	
R346	ERJ6GEY0R00Z	CHIP JUMPER	1	
R349	ERJ6GEY0R00Z	CHIP JUMPER	1	
R401	ERJ6GEYJ102Z	1/8W 1K	1	
R403	ERJ6GEYJ683V	1/10W 68K	1	
R404	ERJ6GEYJ221V	1/10W 220	1	
R405	ERJ6GEYJ154V	1/10W 150K	1	
R406	ERJ6GEYJ155V	1/10W 1.5M	1	
R421	ERJ6GEYJ104V	1/10W 100K	1	
R422	ERJ6GEYJ331V	1/10W 330	1	
R423	ERJ6GEYJ470V	1/10W 47	1	
R424	ERJ6GEYJ105V	1/10W 1M	1	
R425,26	ERJ6GEYJ101Z	1/10W 100	2	
R427	ERJ6GEYJ103V	1/10W 10K	1	
R501	ERJ6GEY0R00Z	CHIP JUMPER	1	
R502	ERJ6GEYJ220V	1/10W 22	1	
R503	ERJ6GEYJ4R7V	1/10W 4.7	1	
R505	ERJ6GEYJ823V	1/10W 82K	1	
R506	ERJ6GEYJ102Z	1/10W 1K	1	
R507	ERJ6GEYJ103V	1/10W 10K	1	
R508	ERJ6GEYJ102Z	1/10W 1K	1	
R509	ERJ6GEYJ103V	1/10W 10K	1	
R510	ERJ6GEYJ474V	1/10W 470K	1	
R511	ERJ6GEYJ224V	1/10W 220K	1	
R513	ERJ6GEYJ682V	1/10W 6.8K	1	
R514	ERJ6GEYJ154V	1/10W 150K	1	
R515-17	ERJ6GEYJ103V	1/10W 10K	3	
R518	ERJ6GEYJ682V	1/10W 6.8K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R601	ERJ6GEYJ151V	1/10W 150	1	
R602	ERJ6GEYJ221V	1/10W 220	1	
R603	ERJ6GEYJ103V	1/10W 10K	1	
R604,05	ERJ6GEYJ221V	1/10W 220	2	
R607,08	ERJ6GEYJ103V	1/10W 10K	2	
R610	ERJ6GEYJ153V	1/10W 15K	1	
R612	ERJ6GEYJ153V	1/10W 15K	1	
R614	ERJ6GEYJ101Z	1/10W 100	1	
R615-17	ERJ6GEYJ1R5V	1/10W 1.5	3	
R618	ERJ6GEYJ330V	1/10W 33	1	
R620	ERJ6GEYJ154V	1/10W 150K	1	
R621	ERJ6GEYJ563V	1/10W 56K	1	
R622	ERJ6GEYJ103V	1/10W 10K	1	
R623	ERJ6GEYJ472V	1/10W 4.7K	1	
R624	ERJ8GEYJ472V	1/8W 4.7K	1	
R625,26	ERJ6GEYJ103V	1/10W 10K	2	
R628	ERJ6GEYJ472V	1/10W 4.7K	1	
R631	ERJ6GEYJ103V	1/10W 10K	1	
R632,33	ERJ6GEYJ221V	1/10W 220	2	
R634	ERJ6GEYJ333V	1/10W 33K	1	
R635	ERJ8GEYJ333V	1/8W 33K	1	
R691	ERJ6GEYJ271V	1/10W 270	1	
R692	ERJ6GEYJ103V	1/10W 10K	1	
R693	ERJ6GEYJ471V	1/10W 470	1	
RJ601-11	ERJ6GEY0R00Z	CHIP JUMPER	11	
RJ701-05	ERJ8GEY0R00V	CHIP JUMPER	5	
RJ801-07	ERJ6GEY0R00Z	CHIP JUMPER	7	
RJ901-05	ERJ8GEY0R00V	CHIP JUMPER	5	
S1	RSH2B003-U	SW	1	
S201-05	EVQPJH05K	SW	5	
S206-14	EVQPTD05Q	SW	9	
SA1	RFKZ0078	SERVICE KIT	1	
SA2	SZZP1054C	PLAYABILITY TEST DISC	1	
W601	REZ0961	FLAT CABLE(3P)	1	
X301	EF0EC4234T3	OSCILLATOR	1	
X402	RSXC33M8R01	OSCILLATOR	1	
Z1	GP1S93	PHOTO INTERRUPTER	1	
Z2,3	GP1S94	PHOTO INTERRUPTER	2	

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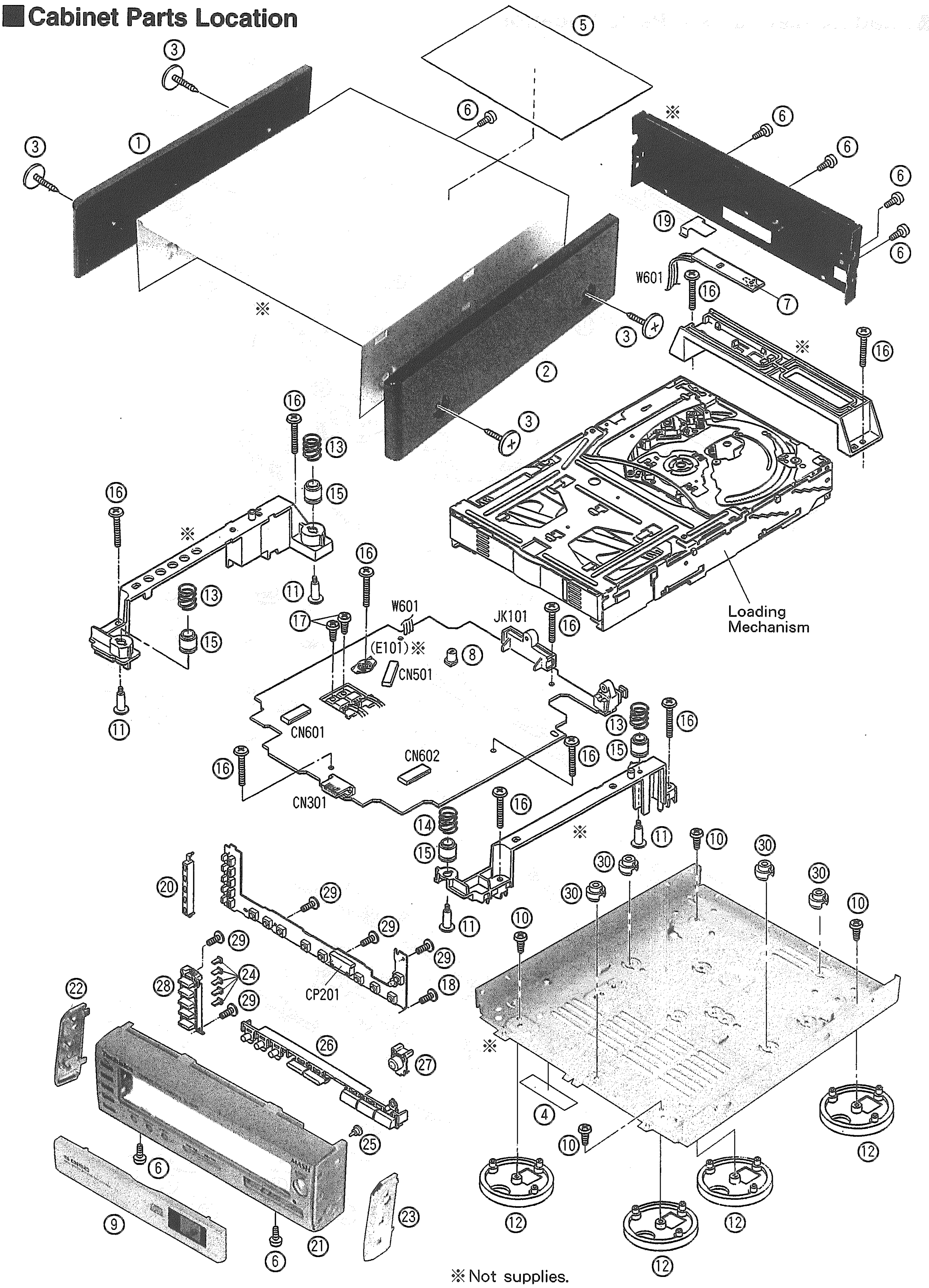
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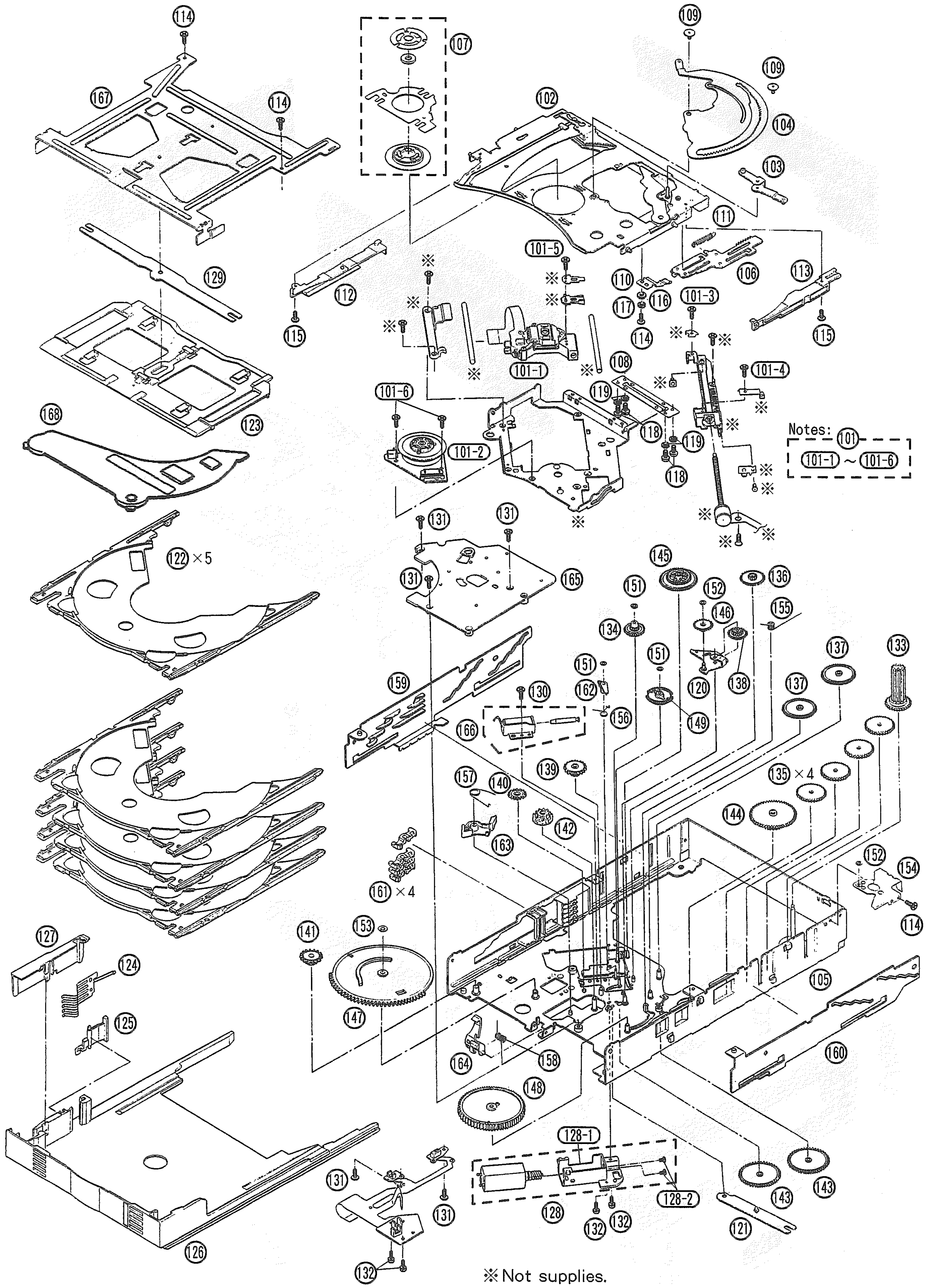
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